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Economic and social consequences of the arms race and of military expenditures



UNITED NATIONS

Department of Political and Security Council Affairs
United Nations Centre for Disarmament

**Economic
and social
consequences
of the
arms race
and of
military
expenditures**

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Updated report of the Secretary-General



UNITED NATIONS
New York, 1978

NOTE

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The term "billion" has been used to signify a thousand million.

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FOREWORD BY THE SECRETARY-GENERAL

This report was prepared by the Group of Consultant Experts on the Economic and Social Consequences of the Arms Race and Military Expenditures which I appointed under the terms of General Assembly resolution 3462 (XXX) of 11 December 1975. By that resolution, the General Assembly requested the Secretary-General to bring up to date, with the assistance of qualified experts appointed by him, the report entitled *Economic and Social Consequences of the Arms Race and of Military Expenditures*,¹ covering the basic topics of that report and taking into account any new developments which he considered necessary.

On behalf of the United Nations, I wish to thank the members of the Group of Consultant Experts for their unanimous report and I commend it to the attention of Governments, of organizations of the United Nations system, and of world public opinion.

In pursuance of paragraph 2 of General Assembly resolution 3462 (XXX), I have sent the report to the General Assembly for consideration at its thirty-second session.



Kurt WALDHEIM
Secretary-General

¹ A/8469/Rev.1 (United Nations publication, Sales No. E.72.IX.16).

GENERAL ASSEMBLY RESOLUTION 32/75 OF 12 DECEMBER 1977

The General Assembly,

Having considered the item entitled "Economic and social consequences of the armaments race and its extremely harmful effects on world peace and security",

Recalling its resolutions 2667 (XXV) of 7 December 1970, 2831 (XXVI) of 16 December 1971, 3075 (XXVIII) of 6 December 1973 and 3462 (XXX) of 11 December 1975,

Deeply concerned that, despite the repeated requests by the General Assembly for the implementation of effective measures aimed at its cessation, the arms race, particularly of nuclear armaments, has continued to increase at an alarming speed, absorbing enormous material and human resources from the economic and social development of all countries and constituting a grave danger for world peace and security,

Considering that the ever-spiralling arms race is not compatible with the efforts aimed at establishing a new international economic order, as defined in the Declaration and the Programme of Action on the Establishment of a New International Economic Order, contained in General Assembly resolutions 3201 (S-VI) and 3202 (S-VI) of 1 May 1974, in the Charter of Economic Rights and Duties of States, contained in Assembly resolution 3281 (XXIX) of 12 December 1974, and in other resolutions of the Assembly, and that these efforts imply more than ever the resolute action of all States to achieve the cessation of the arms race and the implementation of effective measures of disarmament, particularly in the nuclear field,

Conscious that disarmament is a matter of grave concern to all States and that consequently there is a pressing need for all Governments and peoples to be informed about and to understand the situation prevailing in the field of the arms race and disarmament,

Recalling that the Secretary-General was requested by the General Assembly, in resolution 3462 (XXX), to bring up to date, with the assistance of qualified consultant experts appointed by him, the 1971 report entitled *Economic and Social Consequences of the Arms Race and of Military Expeditures*,¹ covering the basic topics of that report and taking into account any new developments which he would consider necessary, and to transmit it to the Assembly in time to permit its consideration at the thirty-second session,

¹ A/8469/Rev.1 (United Nations publication, Sales No. E.72.IX.16).

1. *Welcomes with satisfaction* the updated report of the Secretary-General on the economic and social consequences of the arms race and of military expenditures² and expresses the hope that it will help to focus future disarmament negotiations on nuclear disarmament and on the goal of general and complete disarmament under effective international control;

2. *Expresses its appreciation* to the Secretary-General and to the consultant experts as well as to the Governments and international organizations that have rendered assistance in the updating of the report;

3. *Decides* to transmit the report to the General Assembly at its special session devoted to disarmament, to be held in New York between 23 May and 28 June 1978;

4. *Recommends* that the conclusions of the updated report on the economic and social consequences of the arms race and of military expenditures should be taken into account in future disarmament negotiations;

5. *Requests* the Secretary-General to arrange for the reproduction of the report as a United Nations publication and to give it the widest possible publicity in as many languages as is considered desirable and practicable;

6. *Recommends* to all Governments the widest possible distribution of the report, including its translation into the respective national languages;

7. *Invites* the specialized agencies as well as intergovernmental, national and non-governmental organizations to use their facilities to make the report widely known;

8. *Reaffirms* its decision to keep the item entitled "Economic and social consequences of the armaments race and its extremely harmful effects on world peace and security" under constant review and decides to include it in the provisional agenda of its thirty-fifth session.

*100th plenary meeting
12 December 1977*

² A/32/88 and Corr.1 and Add.1.

LETTER OF TRANSMITTAL

8 July 1977

Sir,

I have the honour to submit herewith the report of the Group of Consultant Experts on the Economic and Social Consequences of the Arms Race and Military Expenditures, which was appointed by you in pursuance of paragraph 2 of General Assembly resolution 3462 (XXX) of 11 December 1975.

The Consultant Experts appointed in accordance with the General Assembly resolution were the following:

Mr. Simón Alberto CONSALVI

Permanent Representative of Venezuela to the United Nations,
New York

Mr. Hendrick DE HAAN

Professor of International Economic Relations, University of
Groningen, The Netherlands

Mr. Dragomir DJOKIC

Counsellor, Permanent Mission of Yugoslavia to the United
Nations Office at Geneva

Mr. Gheorghe DOLGU

Professor of Economics, President of the Academy of Economic
Studies, Bucharest

Mr. Vasily S. EMELYANOV

Corresponding Member of the Academy of Sciences of the USSR

Mr. Plácido GARCÍA REYNOSO

Former Professor of Economics, National University of Mexico

Mr. Saad M. HASHMI

Deputy Permanent Representative of India to the United
Nations, New York

Mr. Ronald H. HUISKEN

Visiting Fellow, Strategic and Defence Studies Centre, Australian
National University

Mr. Ladislav MATEJKA

Deputy Minister, Presidium of the Government of the Czechoslovak Socialist Republic

Mr. Akira MATSUI

Adviser, Ministry of Foreign Affairs, Japan

Mr. Isaac M. RANDOLPH

Former Commissioner for Customs, Liberia

Mr. Kurt W. ROTHSCHILD

Professor of Economics, University of Linz, Austria

Mr. YVES ULLMO

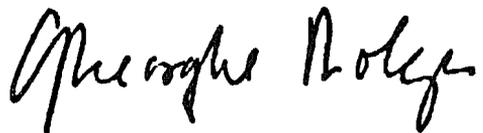
Directeur des synthèses à l'I.N.S.E.E. (Institut national de la statistique et des études économiques), Paris

The report was prepared between July 1976 and July 1977, during which period the Group held three sessions, the first two in New York from 26 to 30 July 1976 and from 28 February to 11 March 1977, and the third session in Geneva from 4 to 8 July 1977.

The members of the Group of Consultant Experts wish to express their gratitude for the assistance which they received from members of the Secretariat of the United Nations and of the specialized agencies and other organizations of the United Nations system. They wish in particular to convey their thanks to Mr. Rolf Björnerstedt, Assistant Secretary-General, who was the representative of the Secretary-General in the Group, to Mr. Liviu Bota, who served as Secretary of the Group, and to Mr. Anders Boserup of the University of Copenhagen, who served as Consultant to the Secretariat.

I have been requested by the Group of Consultant Experts, as its Chairman, to submit to you on its behalf its report which was unanimously approved.

Respectfully yours,



Gheorghe DOLGU
*Chairman of the
Group of Consultant Experts*

His Excellency Mr. Kurt Waldheim
Secretary-General
of the United Nations
New York

INTRODUCTION

1. The threat of ultimate self-destruction as a result of nuclear war is the greatest peril facing the world. For many years, nuclear arsenals have been sufficient to destroy the entire world, but the accumulation and technological refinement of nuclear weapons continues, enhancing the perils and providing increasingly ample means for the final obliteration of mankind.

2. Effective security cannot be achieved today by further armament. The world has long since reached the point where security can only be sought in disarmament and in the expansion of international co-operation among all countries in all fields, the establishment, on the basis of mutual benefit, of ties which will permit the elimination of present sources of tension and conflict and the suppression of the relevance of force in international relations. By constantly increasing the military perils and by impeding the full development of that co-operation, the continuation of the arms race enhances political differences, perpetuates confrontations and erodes security.

3. The cost of the arms race is enormous. Tens of millions are enrolled in the armed forces the world over and tens of millions more work in military-related jobs. World military expenditures over the last five years have exceeded \$1.8 thousand billion in today's prices. At the same time vast social problems remain to be tackled in practically all countries. Public services, health, education, housing, protection of the environment, and social and economic progress generally, all need the resources which the arms race consumes.

4. It is the military forces of the largest powers and the immense destructiveness of the weapons with which they are equipped which casts the greatest shadow over the world. But the arms build-up in other parts of the world also involves very great dangers. Third countries or the major powers themselves could be drawn into conflicts in these areas and even when they are not, the experience of the past decades has shown the enormous devastation which modern weapons, even so-called "conventional" weapons, can cause.

5. These are some of the main features stressed in the first report on the *Economic and Social Consequences of the Arms Race and of Military Expenditures*, submitted to the General Assembly in 1971.¹ They retain their entire validity today. Indeed, arsenals have been growing in size and sophistication and new types of weapons of even greater

¹ A/8469/Rev.1 (United Nations publication, Sales No. E.72.IX.16) (hereafter referred to as the 1971 report).

destructive power have been developed or have become operational in the meantime. The threat inherent in vast accumulations of weapons, and of nuclear weapons in particular, continues to grow. The cost of the arms race for the world as a whole and for the vast majority of countries has continued its rise, while the problems of development and the urgency of social needs are as acute as ever. The threat of war, the risk of final obliteration and the immense human and material costs of the arms race are still the reasons which make disarmament imperative.

6. But there are a number of features which have changed in the intervening period, some of them radically new, some of them merely extrapolations of trends which were already beginning to make themselves felt in the 1960s and which add to the urgency of the need for disarmament. Predictably, as the major powers have made no progress in actual reductions of their arsenals but have continued to expand and refine them, the arms race has proven increasingly difficult to confine geographically. New powers are emerging with a regional military pre-eminence and the number of countries on all continents which are being drawn into the over-all arms build-up, acquiring ever more sophisticated weaponry, is increasing.

7. Also on the cost side of the arms race, the situation has been changing for the worse. In the 1970s many countries experienced deep recession and severe inflation. Most others were affected indirectly by its impact on international trade and by the disruption of the international system of payments. As a result, government programmes in the social and economic fields have in many cases had to be revised downwards. At the same time, though for partly different reasons, problems of environment preservation and resource conservation have gained a new prominence and have been the cause of growing concern. Against this background of a darkened economic outlook and a greater awareness of the scarcity of resources and the fragility of the physical environment, the continued mindless and uninhibited wastage of the arms race becomes ever more incongruous and unacceptable.

8. In the field of international relations as well, profound changes have taken place. New countries and groups of countries have risen to economic and political prominence. Old patterns of alignment are in many cases felt as a fetter on the social development of countries and a hindrance to the development of international co-operation on the basis of sovereignty, equal participation of all States and equal rights and duties. These trends have found their most systematic and explicit expression in decisions to move towards the establishment of a new international economic order.

9. The 1970s have been proclaimed as the Disarmament Decade. Two-thirds through it, it is already possible to begin to take stock. This period has been characterized by a consolidation of détente among the main protagonists in the arms race, by the adoption of a number of partial agreements, bilateral and multilateral, on the limitation of arma-

ments. The Helsinki Conference on Security and Co-operation in Europe was of particular importance for the consolidation of détente. But these results have been far from sufficient to turn or even to stem the tide of the arms race. It is already apparent that the Disarmament Decade is not likely to produce the results hoped for, and that in planning for the next the reasons for that failure will have to be carefully considered. For there can be no relaxation of effort. Genuine and substantial disarmament, particularly nuclear disarmament and particularly of those countries whose military arsenals and military budgets are the most massive, remains a task of the greatest urgency. All countries and Governments share responsibility for taking effective action to halt and reverse the arms race so that genuine security can be achieved and one of the main hindrances to social and economic progress can be removed.

10. In bringing the 1971 report up to date we have on the whole retained the original structure. Chapter I is a general outline of the current arms race. The main emphasis is on demonstrating how deeply entrenched the drive for constant technological innovation in armaments has become, and to explore the consequences of this central feature of the arms race. The drive for qualitative improvement in armaments has led to a number of technical developments which could have far-reaching military-strategic implications. It is also one of the principal forces behind the rising trend of horizontal proliferation: the dissemination of weapons to an increasing number of States. In several respects the forces which drive the arms race along strengthen and diversify as the urge for constant improvements in military technology becomes predominant. All of this has direct implications in terms of approaches to disarmament.

11. Chapter II is an assessment of the gigantic and endlessly rising costs of the arms race in terms of resources: material, human and financial. The true magnitude of this wastage and its intolerable character become apparent when these costs are compared with the unmet and urgent needs in economic development, nutrition, health, education, environmental protection, development of new sources of energy and raw materials and many other fields.

12. But the harmful social and economic effects of the arms race are not confined to the wastage of resources it entails, and in chapters III and IV its wider social, economic, political and security implications are examined. For convenience, they have been subdivided into domestic and international implications, even though that subdivision is in some respects arbitrary. Chapter III therefore deals with the implications of sustaining a large military sector for the general evolution of societies. Some of the major themes are the negative impact on economic growth and development, the role large arms budgets may possibly have played in enhancing inflationary tendencies and economic imbalances in some countries, and finally, the socio-political implications in the widest sense

of the emergence of sectors of society which may have a vested interest in the perpetuation of the arms race.

13. Chapter IV deals with the international implications of the arms race. By far the most important is of course the threat of war which it implies and which it enhances, including the risk of ultimate world-wide destruction. But it is hardly an exaggeration to say that in addition to this the arms race in which the world is engaged affects almost all other aspects of international relations through the pattern of alignments and confrontations it establishes and by affecting the flows of international trade and aid, the transfer of technology, and other exchanges. In particular there is an obvious incompatibility between the continuation of the arms race and the reorganization of relations among States on the basis of equality and co-operation as implied in programmes for the establishment of a new international economic order.

Chapter I

DYNAMICS OF THE ARMS RACE

14. For a number of years now the world has been diverting annually about \$350 billion in today's prices to military purposes. The leading six countries in terms of military expenditure² account for three fourths of this total. Altogether 5 to 6 per cent of the world's total output of goods and services are diverted to military ends. In individual countries the percentage diversion is mostly in the 2 to 8 per cent bracket, although the extremes range from less than 1 per cent to over 30 per cent.

15. The arms race is increasingly a world-wide phenomenon, and, although its intensity varies markedly between regions, few countries and no major region has stayed out of it. The competition in armaments between the largest military Powers is by far the most important. It involves the greatest diversion of resources, the greatest inherent dangers and constitutes the principal driving force of the world-wide arms race. This competition is even more intense than is suggested by the immense size and the rapid expansion of their arsenals, because it takes place primarily in a qualitative rather than a quantitative dimension, each new generation of weapons being more complex and more destructive than the systems it replaces. In such areas as the Middle East the competition is both quantitative and qualitative. In some other parts of the world the term "arms race" is less appropriate, but in every major region and in the majority of countries the process of expanding and improving military forces appears to be gathering momentum. This is particularly the case in regions where countries are exposed to political, military and other kinds of pressures, where the rivalries of other Powers lead to involvement or interference, where territories are under foreign occupation and where countries feel their sovereignty and independence to be directly threatened. This in turn may intensify the wider arms race.

16. This comprehensive character of the arms race is also reflected in its proliferation into the oceans and into space. In the oceans military rivalry has been increasing in recent years, and space has become of paramount importance for the major Powers for a variety of military purposes such as navigation, surveillance and target identification.³

² The United States of America, the Union of Soviet Socialist Republics, China, France, the United Kingdom of Great Britain and Northern Ireland and the Federal Republic of Germany.

³ It is to be noted, however, that the installation of nuclear weapons or any other kinds of weapons of mass destruction in space is prohibited under the Treaty on Principles Governing the Activities of States in the Exploration and

17. The primary engine of this world-wide arms race is constituted by the qualitative arms race among the largest military Powers. This is due chiefly to the virtual monopoly of these Powers in development of advanced military technology, to their overwhelmingly large share of world production and world exports of advanced weaponry, and to the global character of their interests, politically and militarily. The six main military spenders not only account for three fourths of world military spending, but for practically all military research and development (R and D) and for practically all exports of weapons and military equipment. All significant developments in armaments originate here and spread from here to the rest of the world, with greater or lesser time lags.⁴ For many types of conventional weaponry these time lags seem to have diminished in recent years. Meanwhile, as these weapons are being assimilated in the countries at the periphery of the arms race, new generations are under development at the centre to supersede them, preparing the ground for a new round of transfer and emulation. Outside of this small number of producing countries, arms races or competitions are substantially and often wholly dependent on external supplies of arms, technicians and instructors.

18. National arms-inventories are not published, and for most types of armaments estimates of world stocks of weapons would be quite uncertain, partly because figures are not known for all countries and partly because different models of the same general type of weapon system, supersonic fighter aircraft, say, cannot be added together to give a world total because performance characteristics and the conditions under which they might be used are too diverse. Nevertheless, some rough indications can be given:

19. Current stocks of nuclear weapons are sufficient to destroy the world many times over. These weapons and the missiles, aircraft and artillery to deliver them are constantly being diversified and their performance characteristics improved. The numbers of nuclear warheads in arsenals is not known, but the number of carriers of different types is known with a fair degree of accuracy. From these numbers it can be inferred that in 1974 so-called "strategic" nuclear forces in the United States and the Soviet Union included 10-11,000 thermonuclear warheads deliverable from missiles or bombers.⁵ This number has been rising very fast. Nuclear weapons arsenals are also increasing in other

Use of Outer Space, including the Moon and Other Celestial Bodies (General Assembly resolution 2222 (XXI)).

⁴ Reference here and elsewhere to the "six main military spenders"—a categorization which is relevant in terms of the main subject of this report—should not be allowed to conceal the very large differences within this group. Not all of these countries are leading in the process of arms innovation or in the production and export of arms; military expenditure (even more so military expenditure *per capita*) differs widely within this group of countries; and not all of them have military capabilities that give them a global military-strategic importance.

⁵ *The Defense Monitor*, vol. 3, No. 7, August 1974 (Centre for Defense Information, Washington).

nuclear weapons states. Figures given by SIPRI indicate that the number of missile-deliverable warheads of the two major nuclear Powers increased from about 3,700 in 1970 to nearly 12,000 in 1976, a rise by more than a factor three.⁶ Their combined explosive power is believed to be equivalent to 1.3 million Hiroshima-size bombs.⁷ With regard to so-called "tactical" nuclear weapons the situation is more uncertain. Their number is believed to be about four times larger than the number of "strategic" nuclear warheads, but their combined explosive power is but a fraction of the latter. According to one source it is equivalent to about 700 million tons of TNT or to some 50,000 Hiroshima-type bombs.⁸

20. Even though plausible estimates of numbers of major types of conventional weapons such as aircraft, fighting vessels and tanks could be constructed for most countries,⁹ aggregate figures are not very meaningful for the reasons just given. Only for fighting vessels are figures available which attempt to measure the current value of stocks, taking account of the size, vintage and armament of fighting ships and making allowance for technological improvements.¹⁰ Even these estimates are based on assumptions which are open to challenge, and they can provide no more than a crude indication of trends. They indicate that the total number of fighting ships in the world has changed little over the years, although the value of the world stock (in constant dollars) doubled from 1960 to 1970 and rose by a further 30 per cent from 1970 to 1976. This pattern appears to be valid for several other types of armaments as well: world stocks reckoned in numbers have remained fairly constant, but in terms of cost and performance world stocks are increasing very rapidly, and, in the 1970s in particular, current models have been spreading very fast to an increasing number of countries. This is true in particular of modern aircraft. Only 13 developing countries had supersonic aircraft in 1965. A decade later that number had risen to 41. Over the past 30 years a few major arms-producing countries together developed and procured over 70 distinct types of interceptors, fighter and attack aircraft and twice as many variants of these types. To this may be added 30 to 40 types or variants cancelled before they went into production. Even after correcting for inflation, the unit price of fighter aircraft has been doubling every 4 to 5 years, rising from about \$0.25 million per aircraft (in 1975 prices) during the Second World War to well over \$10 million today, reflecting improvements in performance and armament. All aspects of the cost of

⁶ *SIPRI Yearbook of World Armaments and Disarmaments, 1976*, pp. 24-25.

⁷ Ruth Sivard, *World Military and Social Expenditures, 1976*, pp. 10-11.

⁸ *SIPRI: Disarmament or destruction, 1975*, p. 11.

⁹ See, among others, *The Military Balance*, published annually by the International Institute of Strategic Studies. Ruth Sivard, in *World Military and Social Expenditures, 1977*, cites the following world totals: Tanks: 124,000; combat ships: 12,400; combat aircraft: 35,000.

¹⁰ Ronald Huisken, "Naval Forces", *Ocean Yearbook*, University of Chicago Press, October 1977 (forthcoming).

most modern weapons systems, development, manufacture, operation and maintenance have risen very sharply.

21. Since the present report deals with the economic and social consequences of the arms race and military expenditure, the main stress in the following chapters will be on the enormous volume of men and resources devoted to military purposes and withheld from useful civilian production. But the distinguishing characteristic of the present arms race is the continuous qualitative change in the weapons and equipment being produced and deployed. It is primarily this feature that gives the arms race its momentum and it immeasurably complicates efforts to stop or control it.

22. The past decade has seen a continuous stream of new developments in the sphere of nuclear and conventional means of warfare. Because these technological and qualitative changes have not displayed the spectacular, eye-catching qualities which characterized some earlier developments, such as the advent of the atom bomb or of space technology, there is a danger that it may seem as though military technology was remaining relatively unchanged. Such complacency would be entirely unjustified. Recent developments have profoundly influenced military capabilities, world-wide destructive potentials and strategic conditions, possibilities and doctrines. In several respects, it will be seen later that these developments greatly reduce the perils of the nuclear arms race. In the key respect of technological development and its implications, the arms race is today as intense and danger-ridden as it has ever been.

23. This cannot be the place for an exhaustive enumeration or a full evaluation of the more recent qualitative phenomena in the arms race field. But a few of the more outstanding developments shall be mentioned to indicate to what extreme degree the arms race is now dominated by rapid technological development. It will be seen in particular that, given the high proportion of military expenditure devoted to R and D, the fact that military expenditures for the world as a whole and for some important countries remained relatively stable in recent years in no way implies a relatively stable military situation.

24. The most important and spectacular aspect of the arms race in the 1960s was the development and the full-scale deployment of intercontinental ballistic missiles (ICBMs) and of submarine-launched missiles (SLBMs), and the associated deployment of satellite surveillance and communication systems. By the end of that decade there was widespread concern that a new, arms-race spiral may result from the development of anti-ballistic missile systems (ABMs) and from counter-measures in the form of increasing numbers of launchers and more particularly, of increasing numbers of warheads per launcher to saturate ABM systems. The technical form for the latter development is multiple and independently targetable re-entry vehicles (MIRVs).

25. The first agreements on the limitation of strategic arms between the United States and the Soviet Union (SALT I), signed

in May 1972, set ceilings on the number of ABM sites and ICBM and SLBM launchers, not least to prevent this development. They succeeded in halting the deployment of ABM systems. Since 1972 the numbers of launchers have been increasing and are approaching the agreed ceilings. In 1976, there were in round figures 2,500 ICBMs and 1,400 SLBMs in these two Powers together.¹¹

26. It is mentioned elsewhere in this report that the SALT agreement has had positive effects but it is important not to lose sight of the serious inadequacies in this agreement with regard to the limitation of strategic arms. Thus in recent years the arms race in strategic nuclear weapons has increasingly taken a qualitative direction. Vigorous R and D programmes on improved ABM systems have been maintained. The SALT agreement as a whole has had no discernible impact on the extent of MIRV deployment. As a result the number of ICBM and SLBM deliverable nuclear warheads has been rising by about 1,000 every year, even though the number of ICBM and SLBM launchers has remained relatively constant since 1972. (This means that the rate of growth of the number of warheads has declined since 1972.)¹²

27. Moreover, a major post-MIRV innovation is already at an advanced stage of development. This is a manoeuvrable re-entry vehicle (MARV) which can change direction in the terminal stages of its trajectory. This could make defence against ballistic missile attack more difficult, but in particular, if combined with developments now taking place in terminal guidance systems, it can provide MARVED missiles with pinpoint accuracies of a few tens of metres instead of current accuracies of somewhat less than one kilometre. With such accuracies, the silos now protecting the land-based ICBMs can be destroyed with near certainty with a single warhead at the first attempt. As a result it becomes possible to consider using "strategic" nuclear weapons in new ways. In addition to being a means of massive reprisals against centres of population and industry to serve as a basic deterrent, it becomes possible to think of using ballistic missiles in "counter-force" roles to gain military advantage at the outset of a war by striking at the weapons and military installations of the opponent, or to use them to conduct supposedly "limited" nuclear war. The adoption of doctrines of this kind could greatly enhance the probability of nuclear war.¹³

28. No less significant are the implications of the deployment of long-range cruise missiles. These weapons, now under development, are best described as small, highly manoeuvrable, low-flying pilotless

¹¹ *SIPRI Yearbook of World Armaments and Disarmaments, 1976* (see foot-note 6).

¹² See *The Defense Monitor*, vol. 3, No. 7, August 1974, *SIPRI: Offensive Missiles*, Stockholm Paper 5, 1974, p. 26 and recent editions of *SIPRI Yearbook of World Armaments and Disarmament* and of *IISS: The Military Balance*.

¹³ In line with this the appearance of studies tending to belittle the effects of nuclear war and to make it more thinkable must cause concern. See, for example, *Worldwide Effects of Nuclear War, Some Perspectives*, United States Arms Control and Disarmament Agency (no date).

aircraft. They can be equipped with a nuclear as well as a conventional warhead. Current models have ranges of several thousand kilometres and accurate guidance systems, which readjust the trajectory at intervals by comparing terrain features with a map. The accuracy is therefore independent of the range. It will be impossible to determine from its geometry alone whether a cruise missile carries a nuclear or a conventional warhead and, within wide limits, what range it may have. Moreover, it is a small and easily concealed vehicle. Future agreements on strategic weapons may thus become very difficult to negotiate because they would be difficult to verify. The cost of the cruise missile will be at least an order of magnitude less than ICBMs, so that in the years to come it will be well within the financial means of the smaller nuclear powers and of many other countries as well. For some time the exorbitant cost of the latest types of nuclear weapons carriers (ICBMs and SLBMs) has helped maintain the two main military Powers in a class by themselves. In the foreseeable future the importance of this factor may greatly diminish.

29. Developments in nuclear weapons technology proper are equally ominous, particularly the development of small, low-yield nuclear weapons, of enhanced radiation weapons and of tactical concepts for their use in battle. Delivered with higher accuracy and causing less collateral damage per warhead, their use on the battlefield may seem more acceptable, so that the step from non-nuclear to nuclear war may be more readily taken. Once they are used on the battlefield, escalation towards full-scale nuclear war becomes a dangerous possibility.

30. The aggregate effect of these developments cannot be understood in terms of the gradual improvements in performance which have been so much a feature of the 1960s that they are hardly news any more. The importance of the changes now underway in the field of nuclear armaments and their carriers is not that their performance in missions traditionally assigned to them is improving year by year, but that essentially new types of missions are becoming possible. New technologies open the way for new doctrines. These in turn give an appearance of rationality to the deployment of weaponry embodying these technologies. At the same time they increase the dangers of war and alter the terms of the disarmament equation, rendering it more complex and more intractable.

31. Developments in the military use of space have been an essential concomitant, in fact a necessary precondition, for some of these changes. These developments have been overshadowed in the public mind by civilian space exploits. Yet they have been of decisive importance for developments both in nuclear and in so-called "conventional" warfare. In the Indo-China war satellites were used for communication, for weather forecasting prior to bombing raids and for navigation for naval bombardment, but only now are the full potentialities of these means materializing. Satellite technology is having a decisive im-

pact in at least three fields, conferring substantial superiority on the major military Powers:

(a) Target identification, navigation and damage assessment in connexion with counterforce strategies in nuclear warfare,

(b) Surveillance, target identification and navigation in "conventional" warfare, and

(c) World-wide intelligence and surveillance of the military programmes of other countries and of wars in which the major Powers are not directly involved.

Potentially, the consequences of this latter capability could be both positive and negative: verification of agreements on arms limitations or disengagement, on the one hand, and area policing and assistance in aggression, on the other. Citing once more an American example because these are the best known, the NAVSTAR programme may serve to indicate what is becoming possible in just one field. It is a 24-satellite system which is to provide three-dimensional positioning throughout the world to within about 10 metres. Among its many possible uses is the guidance of both nuclear and non-nuclear forces in so-called "strategic" roles and on the battlefield. It is to be established over the period 1977-1984 at a cost in the \$3 billion range.¹⁴ Not only will it allow perfectly accurate guidance of ballistic missiles against fixed targets, an essential component of the counter-force strategy already mentioned, it is also likely to enhance greatly the effectiveness of sea, ground and air forces in conventional warfare and local wars. Many of these military developments come out of civilian space programmes, and in fact the two are not readily separable. In technical terms MIRV was a direct descendant of multiple satellite launching systems, much as manoeuvring and docking techniques are at once ancestors and offspring of anti-satellite weapons being developed and tested.

32. The proliferation of nuclear technologies continues at an accelerating pace. France and China, it was mentioned in the 1971 report, acquired a nuclear weapons capability in the 1960s. In 1974, India, which is not a party to the Non-Proliferation Treaty, conducted a nuclear explosion experiment underground. It was officially termed a peaceful nuclear explosion experiment. This explosion demonstrated how readily and cheaply¹⁵ a small nuclear weapons capability could be derived from a major civilian nuclear programme.¹⁶ In other cases a nuclear weapons capability could have been acquired without being demonstrated in a nuclear explosion. Civilian nuclear programmes, and with them, to a variable degree, the technical expertise and the fissile material required for military programmes have spread all over the

¹⁴ *The Defense Monitor*, vol. 4, No. 5, July 1975.

¹⁵ The direct costs of the explosion, mainly the plutonium and the preparation of the test-site, were officially estimated to have been less than \$0.5 million.

¹⁶ It should be noted, however, that successive Governments in India have repeatedly announced their intention not to use nuclear energy for other than peaceful purposes.

world during the 1970s. In 1975, 19 countries had nuclear power plants in operation, and another 10 countries will have them by 1980.¹⁷ Experimental reactors are now in operation in well over 50 countries. As far as most industrialized and several developing countries are concerned, there are no longer serious technological or economic barriers against initiating a nuclear weapons programme. The only barriers to horizontal proliferation are now political: obligations assumed under the Non-Proliferation Treaty, the good sense of Governments and the example to be set in the coming years by the nuclear weapons Powers in agreeing to reduce their own nuclear arsenals. It is, of course, the continuation of the nuclear arms race, not by itself the spread of peaceful uses of nuclear energy, which endangers peace. Stocks of nuclear weapons and the continuation of the nuclear arms race are factors which encourage horizontal nuclear weapons proliferation. The danger of the proliferation of nuclear weapons can be removed by outlawing and halting the production of such weapons and by proceeding to destroy them. The resolutions of the United Nations General Assembly have repeatedly emphasized that the Non-Proliferation Treaty should become universal. It is consequently important to carry out the system of control envisaged in article III of the Non-Proliferation Treaty and that the parties to the Treaty conclude the safeguards agreements with the International Atomic Energy Agency envisaged in article III of the Treaty.

33. Also as regards conventional weapons developments have been far-reaching. Throughout the 1960s conventional weapons systems underwent continual and rapid refinement in terms of size, speed, propulsion, fire-power, accuracy, and so forth. Unit costs for major weapons systems typically doubled in real terms during this period. For aircraft it was noted they doubled about twice as fast. Sophisticated weaponry, including supersonic aircraft, became commonplace in the armouries of industrialized as well as less developed countries. These developments continued unabated through the period under review. In addition, technological advances in several areas have been combined to produce new types of conventional weapons with potentially far-reaching military and political implications.

34. New precision guided munitions (PGMs), remotely piloted vehicles (RPVs) and other devices have been developed to carry a conventional warhead to its target with hit probabilities close to 1, or, in the case of RPVs, for reconnaissance and similar missions. This group of weapons is a whole family of devices using the latest developments in such fields as laser technology, microelectronics, electromagnetic sensors in the radar, infrared and optical ranges and wide-band data links for a variety of remote or automatic guidance and/or homing devices. A first generation of PGMs made their appearance in the Indo-China war. In the Middle East in 1973, the enormous potential of such weapons against tanks and aircraft was demonstrated. Both the type of

¹⁷ *SIPRI Yearbook of World Armaments and Disarmament, 1976*, p. 32.

technology involved and their cost make PGMs accessible to many countries, and, indeed, many have them now in their inventories.

35. Such precision munitions are expected to have battlefield implications no less far-reaching than anything which has happened since the Second World War. The design and mission assignment of the classical weapons carriers, aircraft, ships and tanks, and even the preponderant place they have had hitherto in contemporary armories might be radically changed. The new weapons, together with developments in such areas as night vision devices, battlefield surveillance and communications, are likely to accelerate the pace of modern warfare and to place a still higher premium on standing military forces. Last but not least, with dramatic improvements in accuracy, the yield of the explosive charge becomes a less important parameter in performance. There have been suggestions, for example, that some of the missions now assigned to "tactical" nuclear weapons could be performed by precision-delivered weapons with a conventional warhead. In principle this could mean that military planners would be more willing to dispense with the use of nuclear weapons in a limited conflict, but in practice it could equally well have the effect of blurring the distinction between the use of nuclear and non-nuclear weapons, thus enhancing the risk that an armed conflict develops into nuclear war.

36. A range of new weapons and munitions based on blast, fragmentation and incendiary effects has been developed, and was used, notably during the Indo-China war, for saturation bombing over large areas. Such carpet-bombing techniques approach nuclear weapons as regards the blind, indiscriminate destruction they cause, the long-term ecological effects to which they give rise, and the high proportion of wounded and maimed among casualties. Other weapons of massive and indiscriminate destruction have not lagged behind. The effectiveness of incendiary weapons has been considerably increased, and the development of binary nerve gases and their munitions (which are relatively innocuous to handle as the nerve gas is only assembled in flight) could seriously weaken the remaining technical and operational constraints on the deployment of chemical weapons.

37. Significant developments have also taken place in a number of other fields such as radar technology, anti-submarine warfare techniques, low-altitude interceptor aircraft, laser-guided cannon and many more.

38. This rapid technological change originates in a few countries, but it readily spreads to the rest of the world through the transfer of arms, whether in the form of grants or of trade. The rate of innovation and obsolescence in weaponry which is determined by the R and D efforts of the leading countries thus imposes itself on other countries, even though there may be time-lags, depending on the weapons and countries involved. This tendency for the rate of innovation of the leading countries to be transmitted to other countries and regions is

already implied by the fact that it is overwhelmingly the technologically leading countries which are the big arms exporters. The six main military spenders, who together account for virtually all military R and D outlays,¹⁸ account for over 90 per cent of all military exports¹⁹ and for 95 per cent of the exports of major weapons to developing countries.²⁰ In areas such as the Middle East where the latest developments in conventional weaponry have, particularly in recent years, appeared with little or no time-lag, this process is particularly clear.

39. The qualitative character of the arms race at its centre is thus one of the principal forces behind the accelerating horizontal proliferation of "conventional" weaponry. In addition to the constant pressure on importing countries to modernize their stocks of weapons and equipment, the qualitative character of the arms race gives rise to various pressures in the main producing countries to raise exports, including the need to dispose of obsolete inventories, to achieve large-scale economies, and to lengthen production runs in order to lower unit costs and finance further research and development efforts.

40. The total value of transfers of military goods and services cannot be determined with accuracy, although several institutions now publish counts and estimates of arms transfers on a regular basis.²¹ The United States Arms Control and Disarmament Agency, which gives the most comprehensive figures, estimates the total value of goods actually delivered in 1975 at \$9.7 billion in current prices.²² This excludes training, services and construction which, if figures for the United States are a valid guide, would add another 30 per cent to the total, raising the figure for the value of military goods and services transferred worldwide in 1975 to an estimated \$13 billion.²³

41. About one third of the total is traded among industrialized countries; another third, approximately, is made up of exports to oil-

¹⁸ 96-97 per cent of the world total for the 1960s according to SIPRI estimates (SIPRI: *Resources Devoted to Military Research and Development*, 1972, p. 10).

¹⁹ *Arms Control Report*, United States Arms Control and Disarmament Agency, Washington, D.C., July 1976, p. 46.

²⁰ *SIPRI Yearbook of World Armaments and Disarmaments*, 1976, pp. 252-253.

²¹ There are considerable differences between the various publications as regards items included, sources of information and methods used for estimating values. Figures published by the United States Arms Control and Disarmament Agency (ACDA) are meant to include all transfers of weapons and ammunition, support equipment and spare parts. Those published by the Stockholm International Peace Research Institute (SIPRI) refer only to "major weapons", meaning aircraft, ships, missiles and armoured vehicles, and aggregate figures are given only for transfers to developing countries. The International Institute of Strategic Studies (IISS) also publishes lists of arms transfers, but mostly does not indicate prices or estimate values.

²² *World Military Expenditures and Arms Transfers, 1966-1975*, United States Arms Control and Disarmament Agency, Washington, D.C., December 1976, p. 56.

²³ Excluded from this estimate is transfer for military consumption of goods such as food-stuffs, petrol and medical equipment which have alternative civilian uses. During the period 1960-1975, training, services and construction accounted for 24 per cent of United States military exports (*ibid.*, p. 3).

exporting developing countries, mainly in the Middle East, and the remaining third goes to all other developing countries together.²⁴ The total value of arms transfers has been growing steadily over the years, increasing by 3 to 4 per cent over the past decade if the exceptionally large transfers of 1972 and 1973, mostly related to the wars in Indo-China and the Middle East, are disregarded (chart 1).

42. Despite this appearance of continuity, very important changes in the pattern of arms transfers have in fact taken place in this period. First, there has been a rapid rise in the export of major weapons to a number of developing countries and in some cases these are increasingly highly sophisticated weapons. According to SIPRI estimates, exports of major weapons to developing countries rose from \$3 billion in 1970 to \$6.3 billion in 1975 and \$7.3 billion in 1976.²⁵ Second, there has been a major shift towards transactions on commercial or near-commercial terms. This increasingly commercial character of the market is closely related to a number of other features of the flow of arms in the mid-1970s which contrast markedly with those of arms transfers in the 1960s. While the flow of second-hand and surplus equipment remains important, an increasing part of the arms trade involves the latest models. In some cases export orders have even taken precedence over supplies to the armed forces of the exporting country itself. At the same time, the tendency for each recipient country to have to rely on a single supplier is becoming less pronounced. Prospective buyers are now often the object of active sales efforts by a number of potential suppliers. Again, the commercial character of the market finds expression in the fact that arms transfers are not almost exclusively a function of the pattern of alliances and alignments as they mostly were in the 1960s and earlier. Many countries are now acquiring weapons from other than traditional suppliers and on the basis of what they feel they need for their own purposes. While the supply of arms obviously remains one of the principal means of gaining influence or of keeping out rival political influence, the diplomatic leverage involved in arms transfers is apparently diminishing.

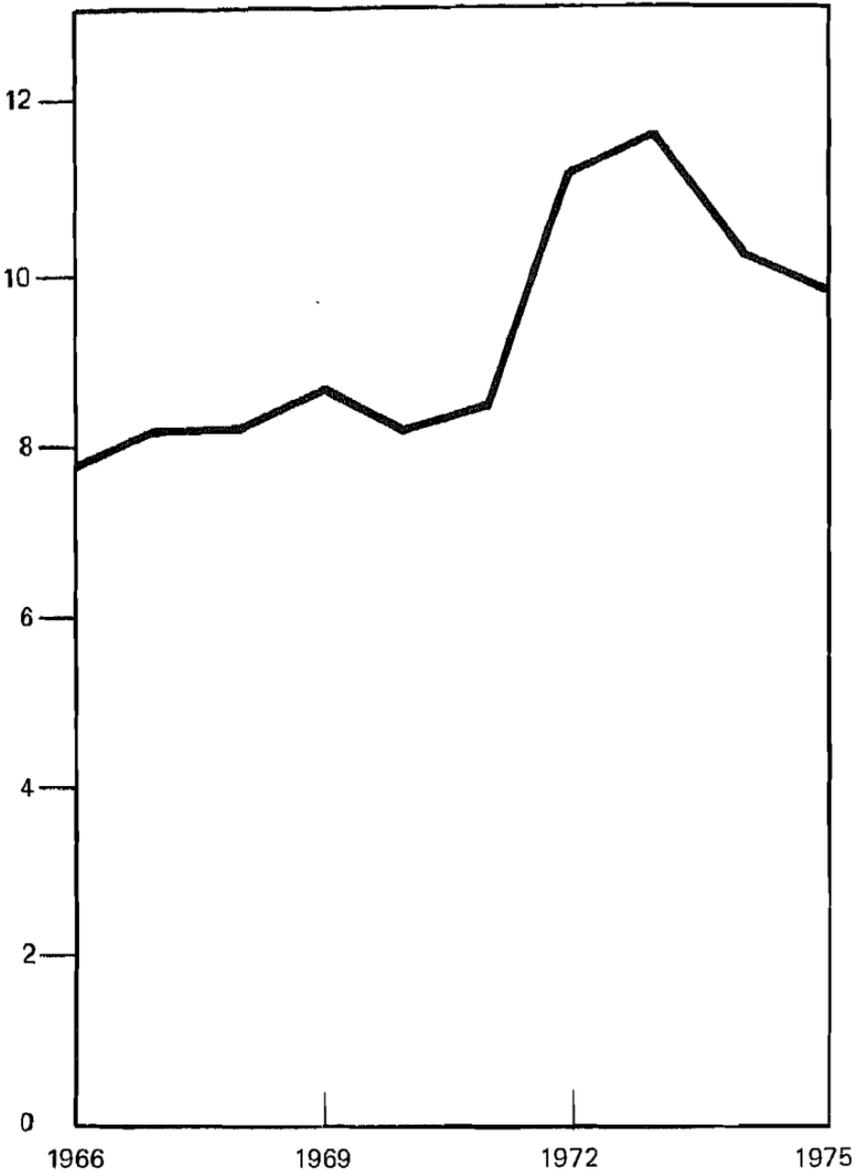
43. These developments in the direction of greater emphasis on up-to-date equipment, greater military and political autonomy for the recipients vis-à-vis suppliers in a number of cases and more intense competition among the latter could have far-reaching political and military consequences. They have led to growing concern and to efforts to find means of regulating this aspect of the arms race. Particularly in recent years, when some specific deals have attracted such public attention, arms transfers have been a very visible part of the arms race. Nevertheless, it must be borne in mind that arms transfers are only one part of the over-all process of arms acquisition. At about

²⁴ *Arms Control Report*, United States Arms Control and Disarmament Agency, Washington, D.C., July 1976, p. 47.

²⁵ All in 1975 prices. *SIPRI Yearbook of World Armaments and Disarmament*, 1977, pp. 306-307.

CHART 1. ESTIMATED VALUE OF ARMS TRANSFERS—ALL COUNTRIES 1966-1975

\$US billion (1975 prices)



SOURCE: *World Military Expenditures and Arms Transfers, 1966-1975*. United States Arms Control and Disarmament Agency, 1976, p. 56.

\$13 billion annually, arms transfers account for 3 to 4 per cent of world military expenditures, or, it may be assumed, for somewhere between 10 and 15 per cent of the military equipment produced throughout the world. It follows that rapid expansion in armaments is, with a few notable exceptions, overwhelmingly concentrated in the main arms producing countries, in other words in arms exporting rather than in arms importing countries.

44. Given that the possession of arms cannot remain the prerogative of a few countries, the realistic alternatives to trade in arms, if the arms race between the main Powers is allowed to go on, are not necessarily preferable to it: arms grants tend to foster relationships of dependence, while domestic arms production is in most cases more costly and could give rise to patterns of dependence between countries and to vested interests within them which are stronger and more lasting than those resulting from arms transfers on commercial terms. Because arms transfers are only a very small part of the total process of arms acquisition, it is not an aspect of the arms race which lends itself to broad and general restraining measures unless such measures are co-ordinated with general progress towards disarmament, involving the arms producing countries as well. Even so, there is urgent need to consider measures aimed at specific regions or weapons systems to avoid encouraging international conflict and to pre-empt costly and pointless local arms races, but without jeopardizing the security of states. There is scope for the exercise of a maximum of self-restraint by countries individually and reciprocally, for collective arrangements on a regional basis²⁶ or for multilateral negotiations to link regional regulations on types or levels of armaments with measures of disengagement by outside powers,²⁷ and in some cases for collective action by the international community to deny arms supplies to particular countries.²⁸

45. The strong qualitative momentum of the current arms race has a number of important consequences for the way it develops, the insecurity it generates and in terms of the possibilities for disarmament. In an arms race where the emphasis is on quantity, where technological development is slow and of little consequence, countries may be expected to match their armament efforts to the stocks or the growth rates of the military forces of their opponents. There is room for saturation levels or for mutually agreed ceilings and reductions. Under conditions of rapid military innovation, on the other hand, the decisive factor in the military procurement plans of countries at the forefront of the tech-

²⁶ Such as the effort of a number of Latin American countries in accordance with the Declaration of Ayacucho (see p. 68, foot-note 98).

²⁷ Nuclear-free zones are one example of this. Negotiations on Mutual and Balanced Force Reductions in Europe and proposals regarding the Indian Ocean are other examples.

²⁸ For instance, resolution 191 (1964) of 18 June 1964 in which the Security Council reaffirmed its call upon all States "to cease forthwith the sale and shipment to South Africa of arms, ammunition of all types, military vehicles, and equipment and materials for the manufacture and maintenance of arms and ammunition in South Africa".

nological arms race is not so much the actual military strength of their opponents but rather those technological advances which opponents might be able to achieve over the next decade or so (10 years being the typical gestation period for a major technological advance). Inevitably, as the apprehensions of military planners shift from the force levels towards the R and D efforts of their opponents, it is increasingly on the R and D efforts of their own country, which are known, that they will have to base their plans.

46. In an arms race where the stress is on technological advances the process of weapon and counter-weapon development therefore tends to become in some measure an *intra-national* process, in some cases, only marginally related to the stages actually reached by other countries.²⁰ Each country is actively seeking means of defeating its own most advanced weapons and of neutralizing its own most recent defences, thus conferring on the development of military technology a momentum and a rate of obsolescence much greater than in comparable civilian applications. A qualitative arms race with its long lead time and its emphasis on future possibilities rather than current realities tends to move in one direction only: one country's advances in weaponry will be emulated by others, but its self-restraint need not be. Similarly an increase in international tension may accelerate the arms race, but an improvement of the international climate will not necessarily suffice to slow it down.

47. In advanced military technology, the achievement of exacting technical specifications and early delivery schedules tend to take precedence over cost considerations when new weapons are being designed. The large cost-overruns which have become an almost normal feature of advanced military projects illustrate this fact. The result is an increasing volume of research and development with each new generation of weapons. For example it is estimated that the number of draftsmen required for the design of a military aircraft today is typically of the order of 4,000 man-years, spread over a 7- to 10-year period. This may be compared with about 170 man-years, spread over 2 to 3 years, required for the design of the Halifax bomber on the eve of the Second World War.³⁰ For many years now rising R and D requirements have had to be met by expanding the staff rather than lengthening the design cycle, if weapons were not to be already obsolete when they entered into service. This trend towards rapid development and design by means of ever larger teams of engineers, scientists and technicians which is inherent in a qualitative arms race cannot fail to create problems of surplus capacity both in design and in production unless military pro-

²⁰ For an illustration of this, see G. T. Allison, "Questions about the Arms Race. Who's Racing Whom? The Case of MIRV" in *European Security, Disarmament and Other Problems*, Proceedings of the Twenty-third Pugwash Conference on Science and World Affairs (Aulanko, Finland, 1973), pp. 194 ff.

³⁰ M. Kaldor, *European Defence Industries—National and International Implications*, Monographs of the Institute for the Study of International Organisation, University of Sussex, p. 9.

curement expands for every new generation of weapons.³¹ Continuous employment is only compatible with rapid development and design if production cycles are short and military stocks are replaced at a rapid rate. The abandonment of many advanced weapons programmes before production started but after hundred of millions of dollars had been spent on development, again a recurrent feature of the past decades, has of course helped to alleviate somewhat this problem of surplus capacity. Even disregarding the inherently wasteful character of weapons themselves, arms production under the conditions of a qualitative arms race appears as an exceptionally wasteful process, whatever the form in which the waste appears: as project cancellations half-way through, as intermittent underemployment or as military arsenals which are allowed to expand for industrial rather than military reasons.

48. The forces behind an ever-expanding arms race and the intense development and exploitation of technology for military purposes cannot be accounted for simply in terms of action-reaction processes, of the apprehension raised in each country by the military programmes of others. As the arms race expands in the direction of ever-greater reliance on advanced technology and draws into its orbit ever new sectors of society, a number of new mechanisms set in which tend to perpetuate the race if not to accelerate it. The sheer logic of technological innovation, the fact that one cannot apparently afford to leave any avenue unexplored, the industrial imperative and other implications of long lead times have already been mentioned. A number of other factors have been proposed to explain the blind momentum and the vast scale which characterize the present arms race. In addition to a variety of more or less explicit political and military motivations applicable to individual cases, a number of domestic factors may be involved. Their importance obviously depends on the precise circumstances. In some instances, the armed forces have been expanding mainly in response to internal strains and have served to uphold the social order in the face of mounting opposition or of profound divisions in society. Another factor is the inertia inherent in institutions once established and consolidated and in the coalitions of interest which may develop between the armed forces, industry, sectors of the scientific and technological professions and political and administrative apparatuses. Some studies of specific decisions on military procurement have emphasized the important roles played by compromise arrangements between different institutional and bureaucratic pressures, on the one hand, and by inter-service rivalries, on the other.

49. A thorough understanding of these several processes which sustain the arms race and determine its orientation is, of course, an essential prerequisite if political action is to turn the tide. Each of them directly points to forces that may impede progress towards disarmament. So far these different processes are, however, on the whole poorly

³¹ Kaldor, *op. cit.*, pp. 7-14.

understood. One important reason is that the same factors and combinations of factors are not at work everywhere. There are evidently great differences between the countries at the technological forefront of the arms race and the countries which are gradually being drawn along, between countries with different socio-economic systems, and so forth. Despite this, studies have had to be confined almost entirely to those countries, the United States and some European countries in particular, for which sufficient information has been available. But if effective progress towards disarmament is to be achieved it will clearly be insufficient to regard the arms race merely as an action-reaction phenomenon, and disarmament as simply a question of political will at the highest decision-making levels. The arms race is not only becoming more dangerous; it is also becoming more complex and more firmly entrenched. It is sustained by a variety of forces acting together, and it must be expected that to remove one of them is not sufficient to reverse its course. In fact, it may be assumed that it is not one or a few single factors but precisely their multiplicity which confers upon the arms race its great inertia and which has rendered it so intractable from the point of view of disarmament, any limited successes in one field tending to be offset very quickly by developments in other sectors of the arms race.

50. A point to be specially stressed is that in an arms race so consistently bent on qualitative improvements and the quest for achieving or pre-empting technological breakthroughs, a mere inspection of trends in military expenditure gives a wrong impression of the true rise in destructive potential. In civilian production it is a well-known proposition that under conditions of continuous technical progress even a policy of zero net-investment will lead to a constantly increasing output. Worn-out machines are replaced by machines incorporating a more advanced technology and this results in higher productivity. The same applies to military expenditure. Even if it does not rise in real terms, the devotion of a large proportion to R and D and to qualitative improvement means that the destructiveness and the potential danger of the military apparatus continues to grow.³²

51. A corollary springing from the observations in the foregoing paragraph is that it is necessary to distinguish between the economic and the military consequences of armaments expenditure. They bear no necessary relationship to one another: a rise in the (real) volume of military expenditure will almost always imply an increase in lethality and destructive power. But when such expenditure is reduced there may well be a divergent movement: a certain relaxation of the over-all economic burden can be accompanied by a further extension of destruc-

³² This point is succinctly stressed by Prof. J. Ruina in his essay on "The Arms Race and SALT" (in D. Carlton (ed.): *The Dynamics of the Arms Race*, Groom Helm, London, 1975, p. 52): "Without limits on modernization and replacement an enormous race is possible, since one can take everything one has and replace it, and keep doing that again and again, thereby improving what one has."

tive power, as indeed we are witnessing today in some countries. Since, however, the concentration on the qualitative (i.e. technological) arms race requires a high input of specially scarce qualified manpower (scientists, technicians, management, highly-skilled workers), shifts towards greater emphasis on rapid qualitative change can be economically harmful, even when they are accompanied by a reduction in total (real) military expenditure.

52. The facts about the qualitative character of the arms race—alarming and growing in importance—have to be kept in mind when measures against a continuation of the arms race are discussed. It will not suffice to take cuts in total military expenditure as the sole criterion of progress³³ unless they are very substantial indeed. Supporting measures to contain the qualitative arms race are imperative.

53. One form of progress consists in setting limits on special weapons and weapon systems. The ABM Agreement between the United States and the USSR or the Biological Disarmament Convention are cases in point. Similar steps over wider ranges of weapons and modes of warfare, nuclear and chemical means of warfare in particular, would help to erect important boundaries for the arms race. To be most effective these measures should be directed at new developments, that is before any significant R and D work has been done and before the projects acquire a political, institutional and industrial momentum. Provided this does not detract from the primary task of constraining and reversing the nuclear arms race and of abolishing existing weapons, there is also a case for seeking prohibitions of the development and manufacture of new types and systems of weapons of mass destruction, as called for in several resolutions of the General Assembly.³⁴ The banning of new weapons and systems of mass destruction must be closely linked to firm measures for the cessation of nuclear weapons production, the liquidation of the existing stockpiles and the complete and definitive prohibition of nuclear weapons. A decisive attack on the qualitative arms race would also be achieved if an agreement could be reached among the leading military powers to cut down expenditure on military R and D.³⁵ Such a measure could also—after redirecting

³³ See, to the same effect, *Reduction of the military budgets of States permanent members of the Security Council by 10 per cent and utilization of part of the funds thus saved to provide assistance to developing countries*, A/9770/Rev.1 (United Nations publication, Sales No. E.75.I.10), p. 9.

³⁴ Resolutions 3479 (XXX) of 11 December 1975 and 31/74 of 10 December 1976. The view was expressed in the Conference of the Committee on Disarmament that new types of weapons of mass destruction would include any types of weapons based on qualitatively new principles of operation, whether with respect to the method of use, targets, or the nature of their effect. As to new systems of weapons of mass destruction, it was said that they should not be established either for new types of weapons or for types of weapons which are based on scientific principles already applied but to which new technological elements of military equipment or means of delivery could give an even more dangerous character.

³⁵ This proposal is included as one of several possible options in *Reduction of the military budgets of States . . .*, para. 33.

the released resources—lead to important economic and social benefits to both the developed and developing nations.³⁶

54. The commitment to incessant qualitative change is deeply embedded in the inner logic of the arms race. Agreements on qualitative and technological restrictions are not easily reached, not least because of difficult verification problems. But if the difficulties of securing some measure of control over this dimension of the arms race are particularly great, so too is the urgency of the need to take determined steps in this direction. Each passing year sees the initiation of a spate of new weapons, and existing programmes become more deeply entrenched in the military and political systems of countries and thus more difficult to stop.

55. In the light of the developments described above, it is necessary to expound openly the dangers of the continuation of the arms race, and to dispel illusions that lasting peace and security can coexist with huge accumulations of means of destruction. The adoption and implementation of resolute measures in the field of disarmament and particularly nuclear disarmament, ultimately leading to general and complete disarmament, has become imperative. At the same time it is necessary to intensify efforts for the adoption of partial measures of military disengagement and disarmament that can contribute to the achievement of that goal.

³⁶ See *Disarmament and Development* (United Nations publication, Sales No. E.73.IX.1), para. 43 and annex III, where examples are given for peaceful uses of military R and D.

Chapter II

THE ARMS RACE IN TERMS OF RESOURCES

56. The massive diversion of resources to military ends described in the 1971 report has continued unabated. The global waste of financial resources, manpower, raw materials, technical skills and research and development capability has gone on year after year at about the level it reached in 1968. From that angle little has changed since the 1971 report. What is fundamentally new in evaluating the situation in the perspective of the latter half of the 1970s is the changed frame of reference. Compared even with the situation at the beginning of this decade there is today a much greater awareness that the world is facing a range of urgent problems of decisive importance for the progress of all States. Their solution will make heavy demands on the mobilization of energies and resources in all countries and will require an approach based on co-operation, international solidarity and concern for the common interest, both of which are incompatible in the most glaring way with the perpetuation of the arms race on anything like the present scale.

57. Chief among these problems, in fact a label encompassing many of them, is the problem of development and the associated task of establishing a new international economic order. The arms race with its economic costs and social and political effects, nationally and internationally, constitutes an important obstacle to effective progress in this respect. Exacerbated by the population explosion, the food crisis and the devastations of natural disasters and war, the problems of eradicating poverty and of improving standards of health, nutrition, education and housing have reached a stage of crisis in many parts of the world. No less important problems are those of industrialization and growth in developing countries, of combating the degradation of the environment, of developing new sources of energy and raw materials while preserving presently available sources, of halting the degradation of cities and many others. All of these make claims on investment, research and other resources in direct competition with military claims.

58. The crisis which has hit the international monetary system, and the economic recession and run-away inflation that have beset many countries, both among the poorest and among the wealthiest, have added to the urgency of many of these problems. With *per capita* growth slowing down in many parts of the world and with uncertain prospects for the near future and for the longer term, economic and social problems have become exacerbated in many countries. Percep-

tions and perspectives have also altered in many countries. Attention has been drawn both to the difficulties of achieving continued economic expansion and to the problems in terms of damage to the environment and depletion of natural resources to which it can give rise. Resources now being absorbed by the arms race are scarce and needed for socially constructive ends.⁴⁷

59. World military expenditure, it was noted in chapter I, has now stood for a number of years at about \$350 billion per year in today's prices. The gigantic costs of this arms race and the perverted priorities of the world at this juncture, more than halfway through the Disarmament Decade and the Second United Nations Development Decade, are perhaps best illustrated by the fact that every year military activities throughout the world absorb a volume of resources equivalent to about two thirds of the aggregate gross national product of those countries which together comprise the poorest half the world's population.

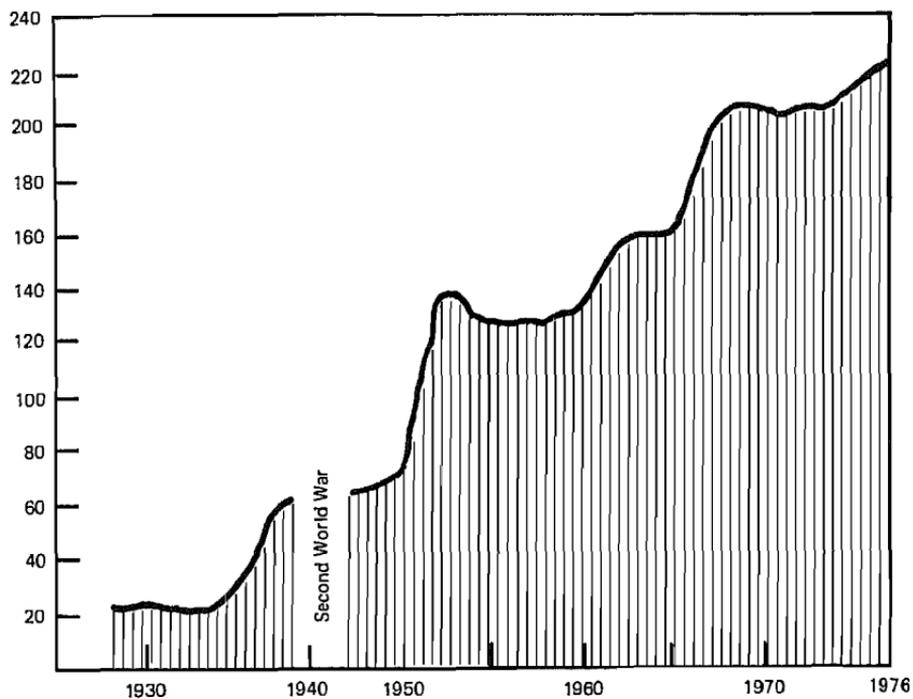
60. Since the Second World War none of the major military powers have been at war with one another, but world military expenditure has been rising steadily (chart 2). Over the past half century it has increased in real terms by a factor of 10, corresponding to an annual increase of nearly 5 per cent. Since the Second World War the direct costs of the arms race have exceeded \$6,000 billion (in 1975 prices) or about as much as the aggregate GNP of the entire world in 1975 (chart 2).

61. The rapid rise in military expenditure during the 1960s followed by a levelling off over the past eight years repeats a pattern which has been encountered several times before. Periods of massive military expansion, mostly in connexion with war (the Second World War, Korea, Viet Nam) have alternated with plateaux lasting for some years. The resulting impression that there are certain periods of relative stability is largely an illusion. In fact, the underlying trend for the great majority of countries is one of long-term irregular rise in military budgets, punctuated occasionally by modest and temporary decline. It is merely the overwhelming weight of a few leading countries in the total which gives the appearance of stepwise growth to the aggregate. A closer analysis of the military expenditures of individual countries in the 1970s does not suggest that this general upward trend has ceased.

62. With world military expenditure remaining relatively stable in real terms since 1968 and world output continuing to grow, even if

⁴⁷ Under the conditions of recession which now apply to a number of countries it is not, of course, self-evident that resources now spent for military purposes would otherwise be productively employed in the civilian sector. The mechanisms through which the economic effects of large resource consumption in the military sector make themselves felt are different under conditions of recession from what they are under conditions of full resource utilization, but they are no less damaging, economically and socially. Consideration of this question is postponed to the next chapter.

CHART 2. WORLD MILITARY EXPENDITURE, 1925-1976
\$US billion (constant 1970 prices)



SOURCE: Adapted from SIPRI: *Armament and Disarmament in the Nuclear Age*, p. 57.

only very slowly by the middle of the 1970s, there has been, of course, a favourable trend in the ratio of military to various non-military areas of expenditure. Public expenditure on education, for example, overtook military expenditure in 1973. But this is a world average and there are very large differences between countries. In the world as a whole there are almost as many soldiers as there are teachers.³⁸

63. As with education, public expenditures for health services have expanded rapidly in recent years. Nevertheless, public health expenditures (to which privately-financed medical care should be added to complete the picture) only amount to about 60 per cent of military expenditure on a world basis. Again differences between countries are very large. Even greater imbalances exist in the critical field of research funding. The resources devoted to medical research world-wide are only one fifth of those devoted to military research and development. In all cases the resources consumed in the military sector are very large compared with the social expenditures of Governments, even in such important fields as education and health, indicating the unfortunate priorities that govern the allocation of public funds throughout the world.

64. Such comparisons of gross expenditure for wholly incommensurate ends are, however, relatively meaningless as they stand. They give only a crude indication of the sacrifices in terms of social and economic progress that the arms race entails. A more adequate assessment would require a survey of the needs for increased resources for social and other non-military purposes, and a comparison of the costs of meeting those needs with the costs of military programmes. While no such systematic survey can be conducted here, a few examples will indicate the magnitude of the needs and will show that even a small proportion of the resources now wasted on military pursuits could go a long way towards alleviating some of them.

65. The most alarming situation of all is in the area of nutrition. Half a billion people throughout the world are severely malnourished and millions more subsist on diets that are far below minimal needs. A large proportion of young children in developing countries are blocked in the physical and mental development because of diet deficiencies which entails incalculable consequences for the next generation. In recent years famine has struck entire regions of the world, and on a *per capita* basis food production in the developing countries as a whole has been declining. Yet the poorest countries, those with *per capita* incomes below \$200, generally countries whose military expenditures are modest in relation to GNP, nevertheless spend (on average) about as much for military activities as they spend on agricultural investment.³⁹

³⁸ Ruth Sivard, *World Military and Social Expenditures*, 1977, p. 21.

³⁹ In these countries less than \$5 billion annually is invested in agriculture (on average 3 per cent of their GNP and 18 per cent of their total investment programme). Robert S. McNamara, Manila Address, 4 October 1976.

To complement national programmes, there is a desperate need for international assistance to finance increased food production and for establishing emergency reserves. At the World Food Conference, in 1974, it was estimated that development assistance to agriculture needed to be stepped up to \$5 to 6 billion annually for the remainder of this decade. While fund-commitments for this purpose have risen substantially since then, they are still off the target by \$2 to 3 billion.⁴⁰ To close this gap, funds equivalent to 1 per cent of the military budgets of industrialized countries would be sufficient.

66. The vast benefits which could result from even trifling cuts in military expenditures and the reallocation of the funds thus saved, are particularly obvious in the field of health. The World Health Organization (WHO) spent around \$83 million over 10 years to eradicate smallpox in the world. That amount would not even suffice to buy a single modern strategic bomber. The WHO programme to eradicate malaria in the world, estimated at a cost of some \$450 million, is dragging on owing to lack of funds. Yet its total cost over the years is only half of what is spent every day for military purposes, and only a third of what will be spent, strictly for procurement, for each of the new "Trident" nuclear missile submarines. According to 1975 statistics, more than one billion people in 66 developing countries live in areas where malaria is endemic, adding its effects to the other privations of poverty, inadequate nutrition, insanitary water supply, poor housing, and multiple infections, causing high prevalence of disease and high mortality, not least in the young, and undermining the capacities of the people in these communities to improve their lives materially and socially.⁴¹ The eradication of some of the important communicable diseases and the implementation of other major programmes outlined by the WHO⁴² would cost trifling amounts compared to the cost of the arms race. Moreover, the potential benefits of a transfer of resources from the military to the health sector reach far beyond the immediate humanitarian aspect. The implementation of such eradication programmes would by itself release important resources in the medical sector for new tasks, and, improving the general health standard in affected areas, would enhance the ability of people to improve their social and economic conditions in other respects. Such cumulative benefits are indeed a general feature of many development programmes, particularly of those which are directed towards the most destitute sectors of the population. In this respect as well expenditures for development purposes stand in stark contrast to military expenditures which are a waste in themselves, which induce other countries to similar wastage, and which undermine the potential for future growth.

⁴⁰ Communications from the Food and Agriculture Organization of the United Nations and from the World Food Council (see A/32/88/Add.1).

⁴¹ Communication from the World Health Organization (see A/32/88/Add.1).

⁴² See the Sixth General Programme of Work of the WHO, adopted by the 29th World Assembly in 1976 and covering the period 1978-1983 inclusive.

67. It is in the field of scientific and technological capability that the diversion of resources to military ends is most massive. It is estimated that at the present time some 25 per cent of the world's scientific manpower is engaged in military-related pursuits. In the past the fraction has been even higher. Indeed, it has been estimated that of total cumulative R and D spending since the Second World War some 40 per cent has been directed at achieving military ends.⁴³ By far the largest part is spent on the development of equipment which has no conceivable civilian use. Medical and biological research, research related to the protection of the environment or to the specific needs of developing countries have consumed few resources compared with military research.

68. As already noted, military research and development is overwhelmingly concentrated in the six main military spenders. Together they are reported to account for 96 to 97 per cent of world military R and D.⁴⁴ As only a small percentage of the world's scientific and technical manpower is found in the developing countries, it follows that military research and development in the world absorbs perhaps 10 times the entire scientific and technological capabilities available in developing countries. Moreover, technological innovation has been very rapid in the military field. One important consequence is that as high-technology weaponry spreads from the technologically leading countries to countries where the technical and industrial base is narrower, and as these countries engage in the production of advanced weapons themselves, military requirements take an increasing toll of already scarce technical skills and equipment.

69. The potential benefits over the years from the redeployment of R and D resources which effective disarmament would permit are so many, differentiated, and unforeseeable that one cannot give an adequate picture of them.⁴⁵ As regards the problems of development it is becoming increasingly clear that in a great number of fields developing countries cannot simply import the technologies which proved adequate in the advanced industrialized countries. Problems such as energy supply, water supply and water purification, agricultural techniques and food preservation, transport and communication equipment, health and hygiene and many others require solutions and technologies specially adapted to the needs and conditions of developing countries. As regards the economic and social problems raised by development there are enormous needs, unexplored in almost every respect, waiting to be dealt with in the systematic, large-scale and purpose-oriented

⁴³ SIPRI: *Arms uncontrolled*.

⁴⁴ SIPRI: *Resources Devoted to Military Research and Development, 1972*, p. 10.

⁴⁵ A list of some possible peaceful uses of research and development resources now devoted to military ends is contained in annex III of *Disarmament and Development: Report of the Group of Experts on the Economic and Social Consequences of Disarmament*, United Nations publication, Sales No. E.73.IX.1. See also *World Plan of Action for the Application of Science and Technology to Development*, United Nations publication, Sales No. E.71.II.A.18.

fashion which has so far been the almost exclusive privilege of military research. In many other fields directly related to problems now confronting the world or to foreseeable [future] problems there is the same urgent need for increased scientific and technological resources. The effective exploitation of the food and mineral resources of the oceans, the development of new sources of energy, the monitoring of environmental health hazards, meteorological research and forecasting, natural disasters warning and natural resource surveys are only a few examples of areas where skills and facilities of the types now wasted in military pursuits could readily be used. It is evident that in all these fields the civilian spin-offs from military research, if not in all cases negligible, have been trifling in comparison with the resources with which they were bought and with the results that could have been achieved if the efforts had been aimed directly at the civilian applications.

70. Manpower is another one of the very large drains on resources which the arms race entails.⁴⁶ The armed forces around the world total approximately 22 million people. In developing countries the number of men under arms has been increasing roughly in proportion to population growth although trends in individual countries vary considerably. In the highly industrialized countries the number has declined slightly in recent years, reflecting primarily the greater sophistication of weapons systems, the rapid increase in the cost of military personnel, the growing emphasis on highly skilled manpower in the armed forces and, in some cases, the scarcity of manpower in the civilian sector. With the labour reservoir which agriculture provided for many decades largely exhausted in the economically most advanced countries, the waste of manpower for military ends may come to be increasingly felt as an intolerable burden.

71. The total manpower absorption by the military, direct and indirect, can only be guessed at. For the United States there is for every three persons in the armed forces another four in military-related employment.⁴⁷ It is estimated that for the world as a whole, 60 million people are engaged in military-related occupations, uniformed or civilian, public or private.⁴⁸ This corresponds to the entire labour force in manufacturing in Europe outside the USSR or to 70 per cent of total employment in the United States in all branches of activity. Even though these figures are obviously not directly comparable, it is probably the case that in most countries those employed directly or indirectly by the military have a substantially higher level of technical skills than the population average and would have had higher than average productivity if they had been employed in the civilian sector. Military and military-related activities everywhere absorb a proportion of the most

⁴⁶ This reasoning is only fully valid under conditions of full employment. The modifications required when this is not the case are considered in chap. III.

⁴⁷ Derived from tables 4 and 5 in the reply by the United States of America to the Secretary-General's note verbale (see A/32/88/Add.1).

⁴⁸ Ruth Sivard, *World Military and Social Expenditures*, 1976, p. 9.

qualified categories of persons which is much higher than what the share of the military budget in the gross national product might lead one to expect. This is obviously true of research personnel, engineers and technicians. It is also true in the field of administrative and managerial skills. In some cases the proportion of industrial employment directly or indirectly engaged in military-related production seems to be much higher than the proportion of GNP diverted to military ends.⁴⁹ In any case it is evident that the over-all drain on highly qualified manpower resources is often larger than either military budget figures or over-all figures for military-related employment suggest.

72. The protection of the environment is an important part of the resource problem. Military activities impact in several ways on the task of repairing the environmental damages of the past and preventing or minimizing further degradation. One factor, perhaps in the long term the most important of all, is simply the diversion of financial and scientific resources involved in the arms race. Effective solutions to environmental problems will in many cases require large research and development efforts and considerable investments for reprocessing, for air and water purification and for many other tasks. Effective action in this field, not least where large-scale international co-operation is required, would be greatly facilitated by the abatement of the arms race and, not least, by the release of important scientific and technical resources which this would bring about. It may be assumed that peacetime military activities, defence industries, military installations, manoeuvres and the like cause environmental damage on top of that produced by civilian activities, roughly in proportion to the share of military expenditure in GNP, but the supreme mode of environmental destruction, deliberate or merely incidental, is, of course, war. Military technology has acquired or perfected means, including saturation bombing, incendiaries, chemicals and, of course, nuclear explosives, of a nature to cause extensive and in some cases persistent environmental damage. In South Viet Nam more than 100 kg of dioxin, the chemical of which 2.5 kg were accidentally released around the Italian town of Seveso in 1976, were inadvertently disseminated as an impurity in one of the widely used chemical defoliants. Concentrations in some areas reached 5 per cent of the level which has rendered areas around Seveso uninhabitable.⁵⁰ This and a range of other environmental and ecological consequences of the Indo-China war are such that it is estimated that the recovery period, at best, will have to be measured in decades.⁵¹

73. The world's armed forces are also major consumers of a

⁴⁹ In Italy where the military budget is around 3 per cent of GNP, 7 to 9 per cent of the total labour force is directly engaged in filling orders from the Defence Ministry, a figure that does not even include employment in supporting industries. See reply by Italy to the Secretary-General's note verbale (see A/32/88/Add.1).

⁵⁰ Figures from SIPRI *Yearbook of World Armaments and Disarmament*, 1977, pp. 86-99.

⁵¹ See SIPRI: *Ecological Consequences of the Second Indo-China War*, 1975.

wide range of non-renewable resources, both energy and raw-material reserves, though statistical information on this is fragmentary or non-existent. In assessing the over-all depletion of natural resources attributable to the arms race one is therefore reduced to fairly arbitrary extrapolations from figures for the United States (when these exist) or to the crude and unconvincing assumption that the military and the civilian sectors of the economy make demands on individual resources in proportion to their relative size. In any case it is clear that the consumption of raw materials for military purposes is even more concentrated in the main military powers than is resource consumption generally. For such metals as aluminum, copper, lead and zinc, military demand in the United States is 11 to 14 per cent of total demand. For several other metals it approaches 10 per cent.⁵² For titanium it exceeds 40 per cent.⁵³ Extrapolating from United States figures, world military consumption of liquid hydrocarbons (excluding petroleum products used in the production of weapons and equipment) has been estimated to be about 700 to 750 million barrels annually.⁵⁴ This is twice the annual consumption for the whole of Africa and corresponds to approximately 3.5 per cent of world consumption. For jet fuel on the other hand, military consumption (in peacetime) is reportedly one third of total consumption for the United States.⁵⁵ Even though information is mostly lacking it is evident that the military contribution to the depletion of natural resources is substantial in many cases.

74. The consequences of the arms race in terms of natural resources may be illustrated by the situation as regards nuclear fuel. The latest survey of uranium resources, production and demand showed that, while there is a great expansion of prospecting and development resulting in major new discoveries, there would nevertheless be formidable problems in ensuring that there is enough uranium at competitive prices to meet demands for the next 25 years. The report estimates that during that period it will be necessary to invest about \$20 billion in exploration and a similar sum in mining and milling.⁵⁶ The amount of fissile material in military arsenals is not known, but if disarmament released 2,000 tons it would be enough to provide the initial and replacement fuel over their useful life for an installed capacity of about 100,000 electrical megawatts of thermal reactors. For comparison with these figures, current estimates of the total installed capacity of nuclear

⁵² S. P. Dresch, *Disarmament: Economic Consequences and Development Potential* (Yale University and National Bureau of Economic Research, New Haven, Connecticut, December 1972). See also *Disarmament and Development*, appendix II.

⁵³ Twenty-first Annual Report of the Activities of the Joint Committee on Defense Production, Congress of the United States, Washington, D.C., 21 February 1972, p. 16.

⁵⁴ Ronald H. Huisken, "The Consumption of Raw Materials for Military Purposes", *Ambio*, vol. 4, No. 5-6, p. 231.

⁵⁵ Ruth Sivard, *World Military and Social Expenditures 1977*, p. 13.

⁵⁶ International Atomic Energy Agency and Nuclear Energy Agency of the Organization for Economic Co-operation and Development, 1975. See communication from the International Atomic Energy Agency (see A/32/88/Add.1).

power plants are 200,000 electrical megawatts in 1980 and 700,000 to 800,000 in 1990.⁵⁷ In addition, complete nuclear disarmament would release more than 20,000 nuclear scientists and engineers, now working on military applications of nuclear energy, some of whom could assist in the peaceful nuclear programmes of developed and of developing countries.⁵⁸

75. To assess in quantitative terms the total squandering of resources—human, material and financial—which the arms race entails, military expenditure is the only measure available. Adjusted to uniform prices and to uniform definitions of the military sector in so far as available information permits, it allows the consumption for military purposes of different types of resources in different countries to be added together to produce an over-all estimate of the wastage involved.⁵⁹ As noted, this annual “opportunity cost” of the arms race is at the present time close to \$350 billion.⁶⁰ But this is far from representing the full costs of the arms race. There are domestic and international, social and political costs which military expenditure figures omit altogether, not to speak of the costs of war. Even apart from this, the material resources and the human efforts absorbed by the arms race and the sacrifice of other opportunities this entails, is only very imperfectly measured by the budget allocations on which global military expenditure figures are mostly based.

76. In several respects the over-all features of the arms race in the first half of the 1970s, as reflected in military expenditure figures,

⁵⁷ Communication from the International Atomic Energy Agency (see A/32/88/Add.1).

⁵⁸ *Ibid.*

⁵⁹ There are considerable difficulties in devising meaningful yet operative and internationally comparable definitions of military expenditure, in converting national currency figures into a common currency, and in deciding how to correct for price changes in the civilian and the military sectors of the economy, respectively. During the last several years, important efforts have been made within the United Nations to improve comparability in these respects and to better understand and measure the consequences of the arms race in terms of resources. See *Reduction of the military budgets of States permanent members of the Security Council by 10 per cent and utilization of part of the funds thus saved to provide assistance to developing countries*, A/9770/Rev.1 (United Nations publication, Sales No. E.75.I.10), and *Measurement and International Reporting of Military Expenditures* (A/31/222).

⁶⁰ Estimates of world military expenditure come mainly from the United States Arms Control and Disarmament Agency (ACDA) and the Stockholm International Peace Research Institute (SIPRI). The figures supplied by these two sources differ considerably in some cases, but not enough to affect conclusions substantially. ACDA figures are generally higher. Thus the ACDA estimate of world military expenditure for 1975 is \$371 billion, 18 per cent higher than SIPRI's estimate of \$314 billion. To ensure comparability between chapters and sections we have chosen to use SIPRI figures throughout this report. Anyway, the margin of error in the figures is probably larger than the differences between figures from different sources. The data on which they base themselves are uneven in quality and some are quite uncertain. For world military expenditure, figures 10 per cent higher or lower than those given would still be plausible. In the trend figures given subsequently, the margin of error is generally much smaller, since this is mostly a question of consistency in definitions. Over long time-spans the use of other, equally plausible coefficients to correct for price changes could, of course, have a noticeable effect.

have been rather different from those of the preceding decade. The 1960s, as shown in the previous report, were characterized by a massive increase in the amounts spent on armaments, even if this rise did not quite keep up with the growth in world GNP for the decade as a whole. From a total of about \$150 billion annually (in 1973 prices) throughout most of the 1950s, world military expenditure rose to a peak of almost \$260 billion in 1968 (chart 3). This increase was massively led by the six main military spenders. For the decade as a whole, they alone accounted for 80 to 85 per cent of world military expenditure and together they devoted a significantly larger share of their combined GNP to armaments than did most other countries (chart 3).

77. In the 1970s this pattern changed in several respects: while stocks of arms continued to rise, world military expenditure remained relatively constant for nearly a decade, close (in constant 1973 dollars) to the figure \$250 to 260 billion reached in 1968.⁶¹ For the last two to three years military expenditures have been rising again in real terms, though at a less rapid rate than in the 1960s. As world output continued to rise, rapidly through the early 1970s and more slowly after that, the share of world output allocated to military purposes diminished. From 6 to 7 per cent in the 1960s that percentage is now down to 5 to 6 per cent. That decrease in the share of output devoted to armaments has been most marked in the group of main military spenders. As a result, their share of world military expenditure has been declining steadily from 84 per cent in 1960 to 73 per cent in 1975, the remainder being about equally shared between the other industrialized countries, on the one hand, and the developing countries, on the other⁶² (table 1).

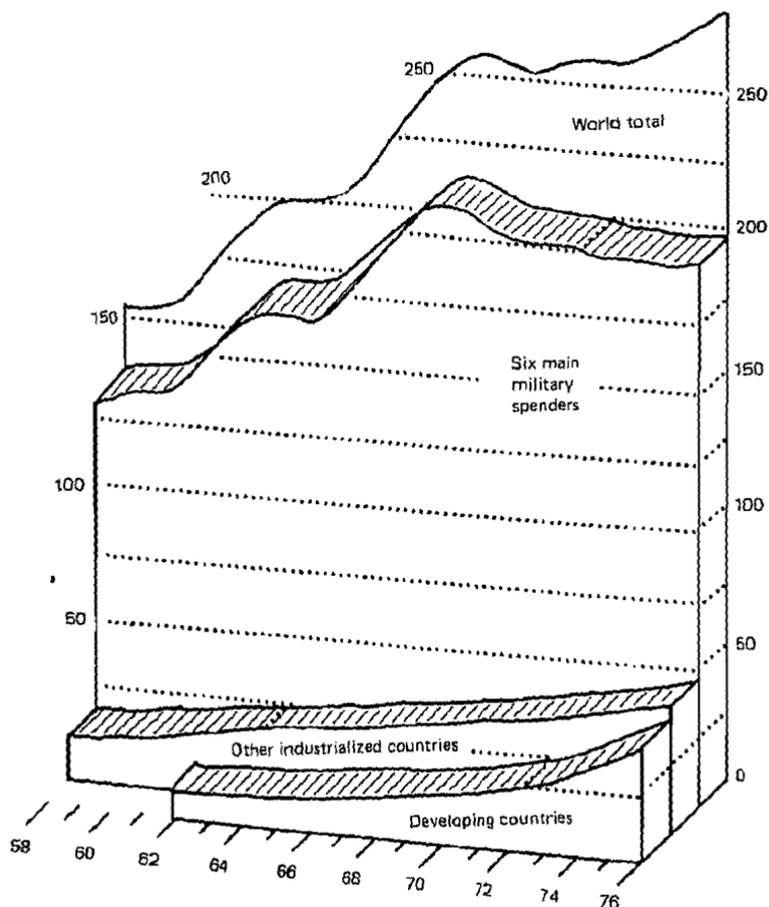
78. Thus, the tendency for military expenditures to have risen only moderately in real terms since 1968 is true only of the aggregate. The flattening of the curve in chart 3 after 1968 conceals marked differences between countries. In fact it results almost entirely from two factors: in the United States there has been a decline in military expenditure from the level reached at the height of the war in Indo-China, although the most recent budgets have reinstated an upward trend. In the Soviet Union, military expenditure, according to the budget figures, remained relatively constant.⁶³ So large do these two countries

⁶¹ Or 350 billion in current dollars. United States Arms Control and Disarmament Agency (ACDA) figures for recent years are \$10 to 15 billion higher than those given here and imply a slow but continuous increase in real terms from 1968 on (Arms Control Report, U.S. Arms Control and Disarmament Agency, July 1976). Earlier United States Arms Control and Disarmament Agency figures showing a noticeable decline for the world as a whole from 1968 to 1971 and which were reproduced in chart 1A of the former United Nations report on *Economic and Social Consequences of the Arms Race and of Military Expenditures* have since been revised upwards.

⁶² For the purposes of this report "industrialized countries" comprise Europe, North America and Oceania, Israel, Japan and South Africa. All other countries are grouped as "developing countries", except China which is one of the six main military spenders.

⁶³ Official military budget figures for the Soviet Union rose from 16.7 to 17.9 billion roubles from 1968 to 1972-1973 and are down to 17.2 billion roubles

CHART 3. MILITARY EXPENDITURES, 1958-1976
 World total and selected groups of countries
 \$US billion (1973 prices)



SOURCE: SIPRI: *Yearbook of World Armaments and Disarmament, 1977*, Appendix 7A.

TABLE 1. MILITARY EXPENDITURES, SELECTED GROUPS OF COUNTRIES, 1960-1975^a
(Billions of constant 1973 dollars and per cent of world total)

	1960		1965		1970		1975	
	Billions\$	per cent	Billions$	per cent	Billions$	per cent	Billions$	per cent
Six main military spenders	133.5	84.4	164.1	82.5	205.9	81.0	194.7	72.6
Other industrialized countries	17.3	10.9	23.3	11.7	31.3	12.3	39.8	14.8
Developing countries ^b	(7.2)	(4.6)	11.5	(5.8)	17.0	6.7	33.8	12.6
WORLD TOTAL	158.1	100	198.8	100	254.1	100	268.2	100

^a SOURCE: SIPRI Yearbook of World Armaments and Disarmament, 1977, appendix 7A.

^b Figures for developing countries are not strictly comparable

from year to year as the number of countries has increased throughout the period. In addition the figure for 1960 is based on incomplete data.

loom in the total that it blurs the fact that the military expenditures in most other countries have been rising as fast in the 1970s as they did in the 1960s.

79. Military expenditures in some developing countries have been rising fast. For this group as a whole they doubled in constant prices over five years, rising from \$17.0 billion in 1970 to \$33.8 billion in 1975 (table 1). Also, in proportion to GNP the rise has been fast (chart 4). But caution is in order when interpreting such trends. Military forces are in most cases being built up from a very low level and, with a few notable exceptions, they are still very small. Average figures for the developing countries are thus heavily influenced by high levels of spending in a few conflict-ridden and war-prone areas. In the regions with the lowest *per capita* incomes, South Asia and mid-Africa, military expenditures are in the region of \$5 *per capita*. This is only 1 to 2 per cent of what the highly industrialized countries spend per head of population. Even when such regions of intense militarization as the Middle East are included in the total, the developing countries with almost 50 per cent of the world's population⁶⁴ still account for only 12 to 13 per cent of its military expenditure. In the over-all context the developing countries are marginal. Evidently, the principal engine of the arms race is not located here, nor are the main problems of disarmament or of resource wastage. But however small in the global context, arms budgets of developing countries loom larger and larger in relation to their limited resources and in relation to their urgent social and economic needs.

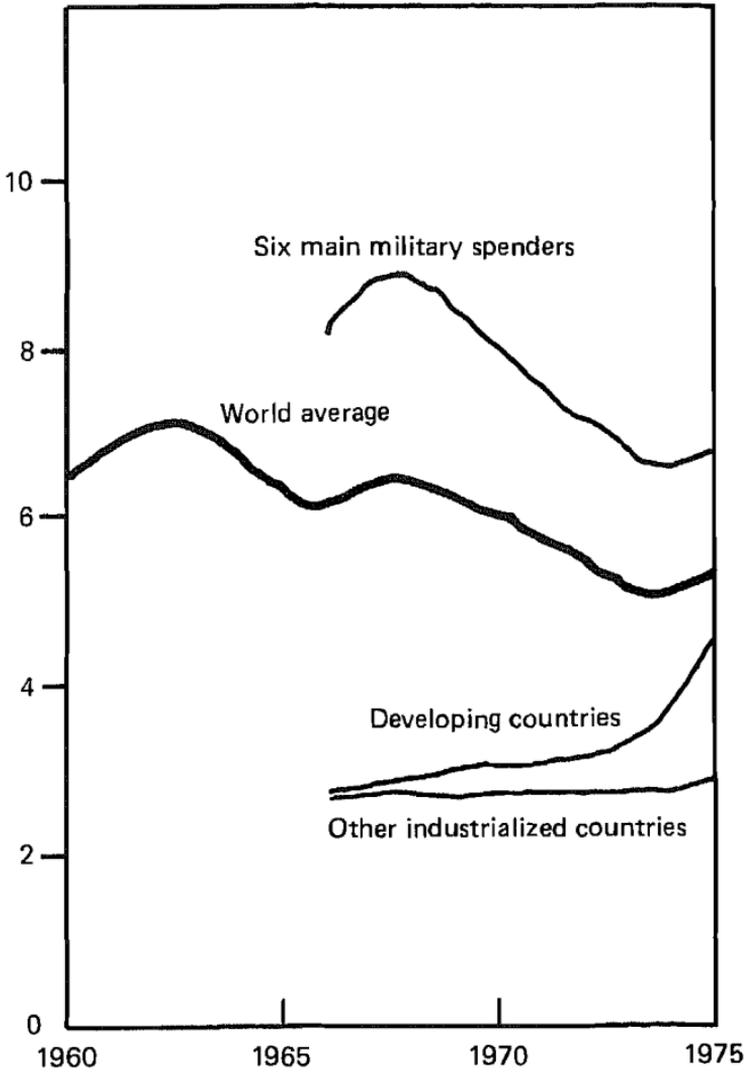
80. The more moderate growth of world military expenditure in the 1970s as compared with the 1960s should not be interpreted as indicating that the arms race has been less intense. As shown in chapter I the arms race between the leading military powers is predominantly of a qualitative nature, its intensity being measured less by the rate of growth of over-all military expenditure than by the volume of R and D spending and the rate at which new weapons systems are introduced. Rates of increase of military expenditure in other countries have shown no sign of abating (table 2). In the last few years world military expenditure has been rising again at an alarming rate. Short of decisive progress in the field of disarmament, particularly in reducing the military budgets of the main military spenders, the world faces the ominous prospect that the Disarmament Decade may close with a rise in world arms expenditure almost as rapid as that which occurred in the 1960s (chart 4).

81. The decline in the proportion of world output devoted to military ends which has taken place since the late 1960s is a positive development, marking as it does a shift in the over-all allocation of resources

in 1977. Owing to differences in coverage and difficulties with currency conversion rates, these figures are not directly comparable to military budget figures elsewhere in this report.

⁶⁴ Here, as elsewhere in this report, China has not been included among the developing countries.

CHART 4. MILITARY EXPENDITURE (PERCENTAGE OF GNP), 1960-1975
World total and selected groups of countries



SOURCES: Military expenditure figures from SIPRI: *Yearbook of World Armaments and Disarmament, 1977*. GNP figures from the United States Arms Control and Disarmament Agency: *World Military Expenditures and Arms Transfers, 1966-1975*.

TABLE 2. RATES OF GROWTH OF MILITARY EXPENDITURE, 1960-1975^a
(Percentage average annual increase of real expenditure)

	1960-65	1965-70	1970-75
Six main military spenders	4.2	4.6	-0.1
Other industrialized countries	6.1	6.1	4.9
Developing countries	—	8.1	14.7
WORLD TOTAL	4.7	5.0	1.1

^a Derived from the figures in table 1.

towards somewhat greater emphasis on socially constructive ends (chart 4). But judging by the figures for the latest years, the share of output wasted on armaments is rising again for the world as a whole and for a majority of countries.⁶⁵ This reflects the slower rate of growth of world output in recent years and the continued rise of military expenditure in most countries. Moreover, there has not been, of course, any long-term redeployment of resources away from the military at all. The long-term transfer has been entirely the other way: *from* the civilian economy where growth is generated, *to* the military sector which has appropriated a substantial part of that growth, increasing in absolute terms (and in constant 1973 prices) by almost 80 per cent from \$150 to 160 billion in 1960 to \$270 to 280 billion in 1977.

⁶⁵ From 1974 to 1975 (the latest year for which the United States Arms Control and Disarmament Agency figures have been published) military spending increased as a proportion of GNP in two thirds of the 125 countries surveyed (United States Arms Control and Disarmament Agency, *World Military Expenditures and Arms* 1966-1975, table II).

Chapter III

THE ARMS RACE AND ECONOMIC AND SOCIAL DEVELOPMENT

82. The drain on resources involved in the arms race has already been commented upon in global terms. On average, countries are devoting 5 to 6 per cent of their output to military ends. This gives an indication of what is denied other avenues of public and private expenditure. One aspect of the economic and social impact of the arms race is the constraining effect on consumption, private and public, and on growth. The considerable importance of this factor is already suggested by the size of military expenditures. In individual countries these vary greatly. In extreme cases, it was noted, upwards of 30 per cent of output is devoted to military purposes; in other cases, the diversion is small, less than 1 per cent. Typical figures are in the range from 2 to 8 per cent. In all cases resources are involved which could be put to better use.

83. In the period under review, the economic outlook for the world has darkened considerably. This has underlined the intolerable character of the waste of resources and has added to the urgency of the many social and economic problems facing the world, problems whose effective alleviation would be greatly facilitated by the reallocation to socially constructive ends of the resources now spent on the arms race. In the 1970s inflation of a magnitude unprecedented in post-war history hit many countries. This coincided with a deep recession, also of a magnitude unprecedented since the Second World War, a recession which has been spreading from the developed market economies to other parts of the world. In many countries the growth of output has slowed down considerably in recent years. In some developing countries it barely, if at all, kept pace with population growth, and in some leading industrial countries it declined strongly in 1974-1975. At the same time problems of energy and raw materials added to this the necessity of adjusting economies to higher energy prices and underlined the urgency of the problems of environment and of the preservation of natural resources. All this resulted in a deep recession. With serious food deficiency in large areas of the world, large fluctuations in the prices of raw materials, rapidly deteriorating trade balances and with world recession making its impact felt on exports and growth, many developing countries faced a situation of acute crisis. It is against this background that the economic and social impact of the arms race is being felt.

84. But the high level of military spending in the world not only diverts resources that are urgently needed for dealing effectively with these problems, but also helps to exacerbate these problems. Large military expenditures contribute to the depletion of natural resources, tend to aggravate inflationary tendencies and add to existing balance-of-payments problems. In this way, they have contributed to economic disruption and political instability in some countries. Even so, the implications of an arms race and of military expenditures on the scale typical of the post-war period are much more pervasive than mere economic considerations would suggest. Being one of the main factors shaping the international context, the arms race exerts a profound influence on the politics, economy and society of many countries. In some cases an ever-present risk of interference by outside powers imposes narrow limits on foreign and domestic policies, limits that may run counter to national aspirations. In other cases the armed forces become a factor of decisive weight in internal politics. Military priorities may also exert considerable influence on the directions taken by the civilian economy.

85. So far, the high levels of military expenditure have not been noticeably affected by the economic recession which hit many countries after 1973. In some countries there is a marked contrast between a still buoyant military sector on the one hand, and a depressed civilian economy and tightening or downright austere government budgets on the other. In some limited aspects of the arms race, one can even register a new impetus directly related to features of the present economic crisis: some countries have been able to improve their balance-of-payments position by increased arms exports. In many industrialized and in a few developing countries the arms industry is now one of the fastest growing sectors of the economy. The international arms market has grown in recent years at a rate which contrasts sharply with otherwise sluggish trends in world markets.

86. Under conditions of full utilization of the factors of production the deleterious economic effects of the arms race on consumption, public or private, and on investment, are directly measured by the volume of resources absorbed for military purposes. When factors of production are idle, when, as in many countries today, there is deep recession and rampant inflation, the processes at work are different, though their effects are not less serious compared with those under conditions of full employment. In periods of recession when men and machines are idle, there is general waste of economic resources, and armaments production does not directly withdraw resources from civilian use, though it may do so (and frequently does) in some bottle-neck sectors. But growing expenditure on armaments is not an efficient way of combating recession. Expenditures on such items as education, health, housing and social welfare are more effective means for both economic and social reasons. First, the maintenance of high and rising armaments

expenditures in the face of stagnating or falling government revenues may lead countries to economize in such areas as health, education and welfare with all the negative social consequences this entails. Second, since in recent times recession tends to go hand in hand with high rates of inflation ("stagflation") and, in some cases, with heavy balance-of-payments deficits, high arms expenditures have proved to be a hindrance for economic policies leading out of recession. High government expenditure on armaments increases demand without increasing the volume of salable or exportable goods. It thus intensifies the problems of inflation and of the external balance. Military expenditures, therefore, reduce the effectiveness of expansionary policies or even lead to restrictionary measures in other fields which tend to prolong recession and unemployment. To the direct waste contained in armaments production is added the indirect wastage of unused resources.

87. Galloping inflation and the disruption of monetary systems have often in the past been associated with wars and rapid increases in military expenditure. The last years do not seem to constitute an exception to this. Successive crises on exchange markets and of the international monetary system as a whole are imputable in part to the massive creation of international liquidity through the deficits of reserve currency countries. World monetary reserves more than doubled in the brief period from 1969 to 1972 and they continued to increase by nearly 20 per cent annually in subsequent years. Over the same period, the "reserve currencies" component (mainly the United States dollar) nearly quadrupled, primarily as a consequence of the deficits in the United States balance of payments. These deficits were the result of many factors—including divergent monetary and economic policies in the United States and other countries and different productivity trends—but one of them was undoubtedly the substantial outflows connected with the war in Indo-China and other foreign military commitments. The monetary crises and the related depreciation of some main currencies have had a negative impact on the trade flows and on the rate of economic growth of many countries, especially the developing countries.

88. One of the main economic problems of the first half of this decade was the accelerating inflationary process in many countries of the world. Theory and data are not at the point where the role of the military expenditure in stimulating inflation can be quantified, but consideration of the various ways in which it can have an effect suggests that its contribution is not inconsequential. High military expenditures sustained over a long period of time are likely to aggravate upward pressures on the price level in several ways. First, military expenditures are inherently inflationary in that purchasing power and effective demand is created without an offsetting increase in immediately consumable output or in productive capacity to meet future consumption requirements. This excess demand creates an upward pressure on prices throughout the economy. This effect is stronger, the weaker and more

narrow the productive base. Where military expenditure contributes to the creation of money for deficit financing of central government expenditure inflationary pressures are generated by the resultant increase in the stock of money. Similarly, if military activities contribute to the emergence of deficits in the balance of payments in reserve currency countries then the stock of money and thus inflationary pressures grow in other countries. Second, there are reasons to believe that the arms industry offers less resistance to increases in the cost of labour and of the other factors of production than do most other industries⁶⁶ partly because of its highly capital- and technology-intensive character, and partly because cost increases in this sector can more readily be passed on to the customer. These increases in the cost of the other factors of production then spread to other sectors of the economy, including sectors where the rate of growth of productivity is lower, forcing up their prices as well. Finally, and more generally, the diversion of substantial capital and R and D resources away from the civilian sector impedes the long-term growth of productivity and thereby renders the economy more vulnerable to inflationary pressures. Inflationary trends, whatever their origin, tend to be exported, affecting other countries in the form of price increases, scarcities or in other ways, depending on the circumstances. The inflationary impact of military expenditure on the prices of exported military goods to developing countries results in a deterioration of their terms of trade.

89. Altogether it is clear that some of the major economic problems of recent years, rapid inflation, trade imbalances and the disequilibria in international payments, are aggravated by the maintenance of large military efforts, even if the contribution of the arms race to these problems cannot be indicated in quantitative terms. In particular there can be little doubt that the effects of sustaining large military expenditures over a long period has contributed to current inflation and its persistence in times of economic recession and high unemployment. A significant reduction in world military expenditure would help in bringing inflation under control.

90. How the actual economic performance of individual countries, public and private consumption on the one hand, and investment and growth on the other is affected by their military efforts depends on a number of factors: the level of economic development, the nature of the economic and social system, the extent and effectiveness of government planning, the volume of military expenditures, political priorities and in particular the extent to which resources used for military purposes would otherwise have been devoted to consumption, private or public, or to investment, and many others. Nevertheless, a number of elements are common, and it is possible by means of general arguments to give an idea of the nature and, to some extent, the order

⁶⁶This is considered more fully in Ulrich Albrecht, "Armaments and Inflation", *Instant Research on Peace and Violence*, No. 3, 1974.

of magnitude of the sacrifices in terms of consumption and growth imputable to the current arms race.

91. As regards economic development and growth in particular, the maintenance and arming of large standing military forces absorbs a volume of resources substantial enough to affect all the basic parameters involved: the volume and structure of investment, the size and composition of the work force and the rate of technological change.

92. The volume of investment which shapes the size and quality of the stock of capital is one of the basic factors determining the rate of growth. To what extent savings on military budgets would be transferred to investment depends of course on the economic framework, on political decisions and on the ways in which governments control the economy. Governments have means at their disposal, direct or indirect and of varying effectiveness, to redirect resources and to channel released resources towards investment. Moreover, military budgets are significantly large in comparison with current levels of investment. Some 20 per cent of total world output is devoted to fixed capital formation, world military expenditures being equivalent to 25 to 30 per cent of this.⁶⁷

93. In most countries, therefore, there is scope for significant rises in investment if military budgets are reduced. Even crude calculations indicate that the potential effects of this on growth could be substantial.⁶⁸ If the greater part of world military expenditure could, instead, be allocated to investment, growth rates might be expected to increase by 1 or 2 per cent. This is in fact very large: perhaps one third of the growth rate achieved in the world as a whole in the early 1970s, and probably larger than the growth rate of world output in the mid-1970s. If such higher rates of investment are sustained, the effects on growth cumulate over the years. Thus, if half the funds spent on armaments throughout the world in the period 1970-1975 had instead been invested in the civilian sector, annual output at the end of this period could have been perhaps \$200 billion larger than it was. The sum of \$200 billion is somewhat more than the aggregate GNP of Southern Asia and the mid-African region,⁶⁹ the two large regions of acute poverty and slow growth in the world, with a total population of over 1 billion

⁶⁷ Note, however, that part of military expenditure constitutes investment and may be included in figures for total investment. Figures for a number of countries are given in annex II.

⁶⁸ The impact of additional investment on the rate of growth is determined by the so-called marginal capital/output ratio. As mentioned in the 1971 report, studies suggest that for developed countries this parameter is in the region of 3 to 4, meaning that in order to raise the rate of growth by 1 per cent, investment must be raised by the equivalent of 3 to 4 per cent of GNP. In actual fact there is little experience with so sudden and massive increases in either investment or growth rates. For large transfers of resources from military purposes to investment, marginal capital/output ratios are therefore no more than a rough guide, indicating the order of magnitude of the likely effect on growth.

⁶⁹ Africa, excluding South Africa, Southern Rhodesia and the countries bordering on the Mediterranean.

people. Over a longer period the effects on world output of the reallocation of part of world military expenditures to investment purposes would be even more spectacular.⁷⁰

94. The glaring investment needs throughout the world in housing, urban renewal, health, education, agriculture, energy, environment and many other fields need no further emphasis. During the last few years conferences on global problems convened by the United Nations, meetings of the specialized agencies and resolutions of the General Assembly itself have outlined or are in the process of outlining policies and programmes in the fields of science and technology, environment, population, industrialization, food, habitat, raw materials and other subjects which will require considerable resources for their implementation. In many fields investment needs are growing rapidly, enhancing the deleterious effect of military expenditures. Continued economic growth presupposes increasing investments in energy and raw materials extraction, both from traditional sources and from new ones. Estimates of the costs of combating pollution indicate requirements of the order of 1.4 to 1.9 per cent of GNP under moderate assumptions and of the order of 2.5 to 4 per cent in a more maximalist version.⁷¹ To eliminate extreme poverty and to diminish the gap between developing and developed countries, developing countries need to increase investments very considerably. To reduce by half before the end of the century the gap in *per capita* incomes between rich and poor countries, currently of the order of 13:1, the same calculations indicate among other things that the rate of investment in poor countries would have to be raised to 30 to 35 per cent of GNP, and in some cases 40 per cent. World agricultural production would have to increase three or fourfold as compared with 1970. This would require substantial investment in opening up new land, in irrigation and in the institution of high-yield techniques.⁷² It is hard to imagine that such programmes would be at all possible without radical cuts in military budgets.

95. Manpower is another major factor in the growth equation where a massive diversion to military ends is taking place. The volume of this drain on resources has already been considered in chapter II. Labour constitutes a real resource that can be put to useful work if released from military-related occupations.

96. This is not contradicted by the fact that in many countries a considerable fraction of the work force is now either unemployed or underemployed. For people are not unemployed because there are no more needs to satisfy. They are unemployed or underemployed because

⁷⁰ A calculation along similar lines of growth forfeited in five Middle-Eastern countries may be found in Fred M. Gottheil, "An Economic Assessment of the Military Burden in the Middle East", *Journal of Conflict Resolution*, vol. 18, No. 3, September 1974, pp. 502-513.

⁷¹ W. Leontieff, *The Future of the World Economy* (New York, Oxford University Press, 1977).

⁷² *Ibid.*, p. 38.

of recessions or structural problems in the economy, and these are themselves aggravated by high military expenditures. In most developed market economies the use of demand stimulus which could deal effectively with unemployment has been inhibited by fears that it would enhance inflationary tendencies and adversely affect the balance of payments. But as already noted, inflation and, in some cases, balance-of-payments deficits have probably been aggravated by high rates of military spending sustained over a long period. In any case, under appropriate conditions funds released from military budgets can be used to raise demand in the civilian sector without stimulating inflation, and, generally speaking, without affecting the balance of trade either way. Indeed, to the extent that military procurement is more inflationary than most other forms of expenditure a dollar for dollar reallocation of monetary resources to civilian ends would in the longer run ease inflationary pressures and leave greater scope for policies to curb unemployment.

97. Despite these obvious facts there is a tenacious myth, dating back to German rearmament prior to the Second World War, that high arms budgets protect against unemployment or at least mitigate it. This belief has an air of self-evidence and is reinforced when, as has often happened, Governments have given publicity to the supposed employment benefits of arms procurement they were contemplating, without adding that alternative uses of the same funds would create jobs as well, normally many more. As a consequence it is still today a widespread belief that disarmament or discontinuation of some specific weapons programme would swell the ranks of the jobless, particularly when unemployment is already high. It should be stressed that such conceptions are wrong. Military outlays are not unique in their ability to generate employment. In fact, whereas military expenditures obviously create jobs in the industries supplying the armed forces, the growing high-technology component in military expenditures has eroded their direct and their over-all job-creating potential. Today there is rapidly accumulating evidence that high military budgets instead of alleviating over-all unemployment contribute substantially to it. According to the United States government estimates (and only for this country do figures seem to be available) a billion dollars of military expenditure creates 76,000 jobs.⁷³ But if the same amount is spent for civilian programmes of the Federal Government it creates an average of over 100,000 jobs, and many more than this if channelled into activities that are particularly labour-consuming. Calculations indicate that if the same one billion dollars were released for private consumption by means of tax cuts it would create 112,000 new jobs.⁷⁴ In other words, a 10 per cent cut in the military budget, that is to say a cut of \$8 to 9 billion

⁷³ "Projections of the Post-Vietnam Economy, 1975" by the United States Department of Labor, Bureau of Labor Statistics, 1972.

⁷⁴ "The Structure of the U.S. Economy in 1980 and 1985", United States Department of Labor, Bureau of Labor Statistics, 1976. The figures cited refer to 1975.

and a corresponding tax reduction, could diminish unemployment by 0.3 million, and more than this if cuts and alternative programmes were selected with a view to maximizing the effect on employment.⁷⁵ Thus, the proposition that military expenditure generates employment at least effectively as, if not more than, non-military expenditure is demonstrably false.

98. The third major factor in the growth equation is technological change. It was pointed out in chapter II that it is in the field of research and development that the diversion of productive resources to military ends is most massive. Throughout the world an estimated 400,000 engineers and scientists are working on military projects. The opportunity cost of this diversion of resources is impossible to quantify. Its magnitude is suggested by recalling that while scientific and technological advances have yielded enormous benefits for mankind, some 40 per cent of the financial resources devoted to R and D since the Second World War have been used in the military field. It is also suggested by the vast and urgent problems which confront industrialized and developing countries alike, and for the solution of which a vigorous and focused research and development effort is in many cases an essential prerequisite. Some of these problems were mentioned in chapter II and they need not be recalled here.

99. In the case of technological innovation, no less than in the case of manpower and unemployment, the true impact of high military expenditures has mostly been clouded in myth. The basic fact of an enormous diversion of resources has been disguised by excessive claims about the importance of civilian spin-offs from military research and development.⁷⁶ The drive for continuous improvement in weaponry and military equipment, so the argument goes, has been an important spur to technological progress, and, so it continues, without the urgency of military demands, funds on a sufficient scale would not have been forthcoming. A limited number of examples, always the same, are cited to prove the case: nuclear power, air transportation, radar, space technology and a few more. Yet a sober assessment indicates that the claims are grossly exaggerated, and even the standard examples are not all of them convincing.⁷⁷ In fact it is remarkable how many inventions of the

⁷⁵ See also Marian Anderson, *The Empty Pork Barrel*, Public Interest Research Group in Michigan (PIRGIM), 1 April 1975.

⁷⁶ For example, O. Morganstern, *The Question of National Defence*, New York, 1960.

⁷⁷ Nuclear power generation was invented before any work started on nuclear weapons, and it is certainly open to question whether the civilian spin-offs from subsequent military nuclear research have outweighed the diversion of entire generations of nuclear scientists and engineers to military pursuits. Supersonic aircraft technology which has absorbed a large part of military R and D funds for decades, has been from the civilian point of view mostly wasted or achieved at an excessive cost, to say nothing of R and D on weapons which have no civilian counterpart at all. Nor is it clear why air transportation should have needed the spur of military applications to develop, when surface transportation did not, and nothing suggests that product innovation in fields such as chemical processes,

greatest civilian importance in production techniques, in materials, in power generation, engines and appliances, in all fields of surface transportation and in communication owed absolutely nothing of their origin and very little, if anything, of their subsequent development to military R and D, even if they were often adopted by the armed forces and adapted to military requirements at a later stage. Military spin-offs from civilian research have been incomparably larger than civilian spin-offs from military research.⁷⁸ The truly remarkable fact is how little that is new, not how much, has come to the civilian sector from military R and D efforts. Product development in the sense of incremental improvements in materials, in miniaturization, in performance, in reliability, etc., has in some cases been made under military auspices, simply because this is where research and development funds have been readily available.

100. The typical emphasis of military research has been on devices which can perform the same functions as the old ones, only more accurately, more effectively and more reliably. The post-war association of the military sector with advanced and dynamic sectors of industry and research has therefore been conducive to an emphasis not on basic research and genuine innovation, but rather on product improvement geared to details of specifically military devices to such an extent that civilian spin-offs of importance have been few and far between. Military technology is moving further and further away from any conceivable civilian use,⁷⁹ and is anyway focusing on fields which are mostly irrelevant for the solution of the more important present and future problems of the world. There can be no doubt that in the final analysis technological innovation in the civilian sector and, with it, growth are not furthered by military research and development but are greatly impaired by it.

101. It has often been pointed out that in some developing countries the military sector has contributed substantially to technological training and has helped to raise the level of technical skills, providing partial compensation for the resources spent on military activities. It is clear, however, that programmes of industrial development, civilian community projects and the like can achieve those results in a more direct, pertinent and cost-effective way.

medical drugs and synthetic materials, where military research has played no major role, has lacked in dynamism.

⁷⁸ If one considers, for example, the entire nineteenth century, when in many respects the basis of contemporary industrial societies was laid and when the techniques of war were revolutionized by the application of new technologies of civilian origin, there are not many instances of the opposite process, of substantial civilian spin-offs from military technology. This, of course, does not prove that the immeasurably larger military research and development efforts of the last decades have had no effect on civilian technology (they obviously have), but it does suggest that rapid and far-reaching technological change does not need the spur of military requirements.

⁷⁹ F. A. Long, *Growth Characteristics of Military Research and Development. Impact of New Technologies on the Arms Race*. The MIT Press, 1971, pp. 288-289. Also Organisation for Economic Co-operation and Development, *Government and Technical Innovation*, Paris, 1966, p. 31.

102. Looking at the growth experience of industrialized countries in the post-war era it can be seen that there is a certain tendency for high economic growth and relatively low military expenditure to go together.⁸⁰ While this can be easily understood as a consequence of the factors that have already been mentioned (more investment and R and D available for the civilian sector), there are probably also some indirect interrelations at work here. Some economists have pointed out that economic growth is facilitated when a country has a dynamic export sector. Competing on the world market ensures and fosters productivity and technological innovation, and a steady flow of foreign exchange earnings provides the basis for an expansionary economic policy free from balance-of-payments difficulties. Countries whose advanced industrial sectors were less preoccupied with meeting armaments demands had a better chance to respond to a growing world demand, particularly in the dynamic sectors such as transport equipment, machinery, chemicals and electronics. Thus lower military expenditure, specifically a smaller indigenous weapons development and production capacity, can help to improve the export position and through it the growth performance.⁸¹

103. High military expenditure, on the other hand, seems to have contributed to the growth difficulties of some industrialized countries, not only by diverting capital and skilled personnel from productive employment, but also because a secure and profitable domestic market for arms production reduced the need for and the efforts of firms to compete on world markets. Lower productivity growth and balance-of-payments difficulties can then lead to a retardation of economic growth. The concentration on unproductive armaments production is, moreover, often accompanied by heavy subsidization of civilian projects in such fields as aerospace, even though their social utility may be limited and their marketing prospect poor. The distortions in the economy and the squandering and misallocation of resources to which the military effort gives rise, is in such cases much larger than military budget figures might lead one to expect.⁸²

⁸⁰ There is, for example, a very marked inverse relationship between the proportion of GNP devoted to military ends and indicators of the investment and growth performance for the seven largest developed market economies in the period 1960-1973. High rates of military spending show a close relation to (relatively) low rates of fixed investment (excluding residential fixed investment), and this in turn correlates with (relatively) low rates of growth of aggregate output and of output per manhour in manufacturing. (Ruth Sivard, *World Military and Social Expenditures, 1977*, p. 13.)

⁸¹ For a more thorough discussion, see K. W. Rothschild, "Military Expenditure, Exports and Growth", *Kyklos*, 1973, pp. 804-813, and papers by *Arbeitsgruppe Rüstung und Unterentwicklung*, Hamburg.

⁸² Measures of so-called "economic defence" in the form of subsidies to branches of production that are needed to ensure self-sufficiency in case of war and blockade may similarly have an important distorting effect on the economy—indeed, such is their purpose. An indication of the volume of funds that may in some possibly exceptional cases be devoted to this is provided by the reply of Sweden to the note verbale of the Secretary-General. It appears that in Sweden economic defence measures, publicly and privately financed, add 10 to 15 per cent to the military budget proper.

104. From the point of view of individual firms in market economies working in those branches of industry which cater to both civilian and military needs, the situation is obviously different. For those particular firms, military orders accelerate growth instead of impeding it. Even in the absence of spin-offs proper, military orders will tend to raise the general level of competence of the firms filling them, will enable them to operate on a larger scale and may perhaps provide some protection in case of faltering civilian demand. The aircraft industry provides the clearest illustration of this and of the competitive advantage which the industries of the large military spenders get from the indirect subsidy to civilian production that is normally inherent in military orders. Pressures to maintain international competitiveness in those particular branches of industry provide one of the mechanisms of a non-military nature whereby the arms race is propagated among the major industrial powers. For aerospace industries, for example, the indirect subsidies to civilian production arising from filling military orders are often of considerable importance if they are to remain competitive. Producers in countries where military purchases are small, relatively speaking, are at a serious disadvantage, and, if other forms of subsidy are not available, they may exert pressure for more vigorous armament programmes.

105. The international sale of arms, or, more precisely, of military goods and services, today by far the most important part of arms transfers, is an aspect of the arms race which also has direct and indirect implications for the economies of the countries involved. For all those countries which are not major weapons producers themselves, an increase in military expenditures will normally mean increased imports and will result in a deterioration of the balance of trade. The availability of arms on a grant basis or at concessionary prices is now distinctly limited. For the majority of countries in the world the arms race thus compounds balance-of-payments difficulties that are in many cases already severe. The fact that imports for military purposes generate no income and no exports with which to service the added debt further aggravates the longer-term effect on the balance of payments. For some developing countries facing acute debt-servicing problems, the balance of payments aspect of the costs which the world-wide character of the arms race imposes on all countries is particularly salient.

106. The trade in arms has opposite effects on the economies of importing and exporting countries. What is involved is a highly unequal exchange, detrimental in particular to efforts to bridge the gap between poor and rich countries. For the importer of arms it is in economic terms a pure waste of surplus which could have been used productively. Even when weapons are provided as gifts there are maintenance, operation and infrastructure costs to be included on the debit side. In contrast to the import of civilian goods these outlays raise neither consumption nor production and generate no future output from which to pay for them. Not so for the exporting country. That part of its arms pro-

duction which is destined for its own armed forces again figures to a first approximation simply as an economic loss. But its production of weapons for export is no different in economic terms from any other export production. In some cases it may be in fact more advantageous than other kinds of export because the advanced-technology component in arms exports is particularly high. These exports therefore tend to stimulate important sectors of the economy of the exporting country, such as mechanical engineering, electronics and the industries supplying these sectors. Recent arms deals involving highly sophisticated equipment have enhanced these tendencies since the price of such equipment often includes a large component to pay for R and D costs. In addition to orders for existing weapons, some recent contracts have even involved the development of new or improved weapons systems specially for export to the contractor. In this way importing countries are subsidizing military R and D in the arms exporting countries. This also applies when, instead of importing weapons, countries produce them under licence. In most cases this subsidy is of marginal importance for the exporting country but in a few cases the viability of certain national arms industries or of particular companies is significantly affected. In a very real, although often marginal, way importing countries are thus helping to perpetuate the lead in military technology of the main arms exporting countries and to sustain the rate of innovation and obsolescence in weaponry.

107. In the countries with a centrally planned economy the negative consequences of military expenditures are in principle of the same character as in other economic systems, but they make themselves felt in a different socio-economic context. In planned economies the volume and structure of both investment and consumption are directly regulated by the State, the central plan specifying tasks in mandatory fashion. These countries have maintained relatively high rates of development and have preserved a high degree of monetary stability also in the 1970s. But also for these countries military expenditures represent lost opportunities for economic and social development. Military expenditures are a drain on resources which could have been used for civilian purposes, either to accelerate growth and modernization in such fields as industry, agriculture, transport, or to raise the standard of living and improve the quality of life. If these countries did not feel the need to devote a certain proportion of their material product to military purposes, they could shorten the time-span needed to fulfil their long-term development targets and they would be in a position to give added dynamism to their participation in international economic exchanges.

108. The diversion of manpower to military purposes is also an important matter in view of the scarcity of labour resources which, to a greater or lesser extent is making itself felt in all centrally planned economies and is becoming one of the main factors limiting further growth of production and services. Military demands on energy and

raw materials as well as on production and research capacities which could otherwise be fully utilized for civil purposes, also exerts a considerable negative influence on further economic development. Even if central planning in principle allows available resources to be allocated so that military expenditures do not distort resource allocation in the economy as a whole, military expenditures necessarily diminish the rate of economic and social development. In case of the reduction of military expenditures the centrally planned economies will have the tools necessary for the reallocation of released resources, subject only to the obvious technical constraints inherent in existing machinery, plant and skills.

109. Most of the remarks in this chapter and elsewhere in this report apply generally to all countries. But as with centrally planned and developed market economies, certain additional comments can be made with respect to the developing countries. In many of these countries, economic and social development programmes are largely determined and financed by the Government. Military expenditure and development programmes appear as direct alternatives for the allocation of government resources. In recent years military expenditure in many of these countries has been growing faster than the civilian economy (see chart 4) thus narrowing the scope for effective development programmes. More specifically, the general negative effects of resource diversion to military uses tend to be aggravated in developing countries because modern armed forces make heavy demands on many of the resources which are most needed for development and which constitute severe bottle-necks in many cases: foreign exchange, skilled technical and managerial manpower and maintenance, repair and industrial production capacity.

110. Skilled manpower is one of the scarcest resources in developing countries. As already noted, the complexity and sophistication of much of the military equipment now being acquired is such that its operation and maintenance make very large demands on skilled technical and managerial manpower. Much of it has to be imported as foreign technical staff. In other cases, training is provided (at the buyer's expense) in the supplying country.⁸⁸ Even so, most of the technical staff has to be taken from the limited pool of the recipient country. In view of the fact that total employment in manufacture in these countries is mostly only a few times, occasionally as much as 10 times, the size of the armed forces, this diversion of resources may be important.

111. Steep increases in military expenditure have been registered in countries engaged in protracted international conflict and/or where social conflicts are sharpening and social inequalities are increasingly

⁸⁸ For example, the cost of training a Mirage III interceptor pilot in France, including the amortization of equipment, is estimated to be close to \$1 million (*Le Monde*, 15 January 1974).

felt. To countries in this situation an assessment of the burden of militarism in terms of diverted resources is inadequate. Major social and political costs must be added, as must the immense destructiveness of modern warfare and domestic armed conflict in terms of human lives, of production facilities and infrastructure, and even of the physical environment.

112. The continuation of the arms race tends to draw all countries along with greater or lesser delays. In the process the limited strength of smaller countries and of countries with a limited industrial and technological base is undermined. These countries find themselves in a situation where the rate of innovation in military technology is set by countries with much greater resources. Under these conditions, merely keeping abreast in the arms race will require ever greater sacrifices. An ongoing arms race with its inherent tendency to spread and intensify in geographical, technological and economic terms will constitute an ever greater obstacle to social and economic progress in all countries and to the urgent development tasks of developing countries in particular. No task is more urgent than to stop this technological spiral at the centre of the world arms race where it originates, and through substantial disarmament in the leading military powers, to pave the way for major reductions in arms expenditures throughout the world.

113. Closely related to the topics dealt with here is the question of possible economic effects of disarmament. It follows from what has been said so far that whatever the socio-economic system of individual countries the long-term economic effects of disarmament would be wholly beneficial to them. That point is no longer disputed and is not the issue here. But the fear has also been voiced that in the short term, until reconversion of plant and installations is completed, and redeployment of personnel and employees has taken place, disarmament or significant cuts in military expenditures might cause economic disruption, recession and an increase in unemployment. The possibility that localized and temporary difficulties may arise is not excluded by the fact that the over-all economic effects of disarmament would be highly beneficial. Indeed, there have been cases when such difficulties did occur as a result of the discontinuation of specific military programmes. Nevertheless, it is important to note that the over-all effect to be expected from disarmament is not recession but, given the necessary compensatory measures, stimulation of the economy and a decline in unemployment. A recent study on the effect of disarmament on aggregate demand and unemployment confirms this.⁸⁴ In many of the branches now supplying the armed forces with food, clothing, transportation equipment, construction and so forth demand would thus be unaffected by disarmament or it would rise, and redeployment to satisfy civilian needs would be

⁸⁴ S. P. Dresch, *Disarmament: Economic Consequences and Development Potential*, 1972.

straightforward. Apart from such sectors, military procurement is characterized by high concentration in particular industries. In the aerospace and the ordnance and equipment sectors, for instance, military procurement may account for half or more of total output. In some others such as shipbuilding, transportation equipment and electronics and communications, while smaller than this, it may still account for a very large fraction of output.⁸⁵ Moreover, military production, installations and institutions have in many cases become concentrated in certain regions or localities in which they account for a very large part of employment and income. For such industries and regions a substantial, rapid and unanticipated decline in military orders could lead to localized recession. But if cuts in military expenditure are spread over a number of years and adequate compensatory steps are taken, economic disruption, even in the short term, would be minimal. We fully agree with the conclusion of the 1962 experts' report on *Economic and Social Consequences of Disarmament*, that no major instability need result from disarmament.⁸⁶

114. It is not intended to belittle the economic problems associated with disarmament. The most severe problems, which are common to countries with different socio-economic systems, stem from the inevitable lack of complete coincidence between the manpower and facilities made redundant by cuts in military expenditure and those for which demand would rise as a result of the reallocation of funds to civilian ends. In the short run the skills required for expanded civilian research programmes might not precisely match those released from military programmes. Similarly, some firms now producing military equipment would need time and capital to readjust to civilian production. Adequate funds for compensation or conversion for these sectors and special development programmes for regions or towns which would be particularly affected would, however, absorb but a tiny part of the resources saved. None of these problems are insurmountable from an economic or technical point of view.

115. Nevertheless, it would be of great importance if plans and legislation to facilitate conversion from military to civilian production were drawn up and adopted as soon as possible. One useful approach of a general nature is to require of industries that they rely on military orders for less than some given percentage of their production.⁸⁷ Industries for which this is impossible for technical reasons may be required to seek location in communities and regions which are likely to be able to absorb their work force with its particular combination of skills in case it is made redundant. In some cases it may be desirable to disperse military production around the country. Another approach,

⁸⁵ See, for example, the reply of the United States to the note verbale of the Secretary-General (A/32/88/Add.1).

⁸⁶ United Nations publication, Sales No. 62.IX.1.

⁸⁷ Attempts in this direction have been made in Sweden, see A. Myrdal, *The Game of Disarmament*, New York, 1976, pp. 152 and 355-356.

not an alternative but a complement to this, is to require factories engaged in military production to draw up alternative plans for using their equipment and employees in civilian pursuits. Such measures would not only be of assistance in disarmament, they would also help to break some of the most powerful coalitions of political forces opposing disarmament by rendering industry and workers less dependent on a steady flow of military orders. But it must be recognized that conversion is primarily a question of particular communities, particular plants, particular groups of workers and scientists and that it needs to be dealt with in concrete terms to be effective in this respect. When alternative plans are not available there may be a temptation, and sometimes irresistible pressures, to devise some new weapons project merely to keep the industry going.

116. A related problem which has sometimes been raised is the dependence of some developing countries on continued sales of raw materials for which military demand is an important part of total demand, or on revenues from major base facilities on their territory. Calculations reproduced in annex III of the 1971 report attempted to assess the magnitude of the first of these problems. It was shown that for none of the raw materials studied, except perhaps for bauxite, would conversion from military to civilian consumption patterns have any noticeable effect on demand. Even for bauxite the decline in aggregate demand following disarmament was estimated to be less than 5 per cent. These are obviously problems of a very limited kind which can readily be solved by temporary compensation.

117. However important the many costs of a growing military sector which have been dealt with so far, it is clear, nevertheless, that the domestic consequences of involvement in the arms race cannot be reduced to the economic costs and to the direct social consequences of diminished civilian production and growth. To regard it thus is to miss one side of the picture altogether. Contemporary military institutions are often such powerful and pervasive parts of society that they can have a considerable impact on political and social conditions and perceptions and can place important constraints on the evolution of societies. In this sense they can represent a major social force, influencing the social, political and ideological development of a country. The impact of military institutions on social processes, while less amenable to meaningful quantification and not easily ascertainable in general terms, valid for all countries, nevertheless needs to be considered to make the picture complete.

118. To what extent military forces come to act also as a social and political force, and if so what forms it takes, depends very much on circumstances, on the social framework, on economic conditions and on the political context. It would be a crude oversimplification to assume that the military establishment is the same phenomenon everywhere or that its specific political impact could be talked about in

general terms. Traditions, political and social affiliations, historical experiences in connexion with former wars or liberation struggles and the pattern of interrelationships with other institutions in society are too diverse. There are cases in which the armed forces have become, for one reason or another, centres of attraction or incubation of modernizing forces in society and have played a role in social development going far beyond their strictly military functions. In other cases they have constituted a major hindrance to social development and have served to perpetuate privileges and to repress popular aspirations. Nevertheless, it should be recognized that the military institution in the wide sense (including such institutions as paramilitary forces or secret services which may be formally independent of it) enjoys a unique position of strength in many societies. This is due to a variety of factors. First, there is its sheer mass combined with a centralized organization. Second, there is the privileged relations which the armed forces may entertain with key sectors of industry, being at once a customer and a link to Government. Third, there is a privileged relation to the State and many areas of government policy (foreign, industrial, infrastructural, regional and others, depending on the circumstances). Fourth, the military institution can, to a varying degree, protect its operations from public scrutiny, and conduct a variety of activities under the label of national security. These may range from the establishment of a full-fledged covert foreign service or the covert conduct of foreign wars to moderate or more comprehensive surveillance of categories of political opponents. Last, but of course not least, the armed forces enjoys a monopoly of physical force and a position of instrument of ultimate recourse, vis-à-vis other States and internally.

119. It is the integration of this social force with industry and Government which has been described as the "military-industrial complex", whose "total influence—economic, political, even spiritual—is felt in every city, every statehouse, every office of the Federal Government".⁸⁸ There are very few countries where the interconnexions between the armed forces and other sectors of society, and the over-all social, political and economic implications of this has been studied in as much detail as in the United States, but it needs emphasizing that such interpenetration is in no sense an exclusively American phenomenon. Wherever they occur, military-industrial or military-economic-political complexes have a self-preserving and self-reinforcing character. They are powerful, resourceful and pervasive coalitions that have developed around one common purpose: the continued expansion of the military sector, irrespective of actually military needs. In those countries where their influence is strong, such complexes are obviously an important factor in the perpetuation of the arms race. Many studies of the military-industrial complex in the United States (but their results can to a greater or lesser degree be generalized to other countries) have shown its

⁸⁸ President Eisenhower, Farewell Speech to the Nation.

ability to keep fears alive, to stimulate them when needed, and to initiate compensating activities to offset the effects of more marginal types of arms control measures. Disarmament efforts, if they are to be successful, will have to take account of this.

120. If the over-all weight of the military in the internal, political, social and ideological processes of countries is fairly obvious and can be described in general terms, the specific direction in which it exercises its influence is not always readily apparent. There are many countries where major internal conflicts have been avoided or contained for so long without the active involvement of the armed forces that these have come to be regarded as genuinely neutral in regard to internal social and political processes, and concerned solely with the prevention of foreign aggression. What has already been said about the complex interlocking between the military and other social forces suggests that this cannot always be the case.

121. Militarization often goes hand in hand with social tension. As a means of domestic repression it is not least characteristic of countries where considerable social differences and extreme exploitation of large sectors of the population prevail. South Africa may serve as an extreme illustration, but a similar pattern, albeit not with the same racial dimension to it, can be found in other places. In such countries it is not unusual to find, for a period at least, a considerable rate of economic growth together with heavy expenditure on armaments and on domestic policing. To conclude from such instances that high military expenditure is consonant with economic growth, is to disregard the social ends for which growth is only a means.

122. In most cases one may assume that the military institution and the armed forces have a double role. They are at once an ultimate recourse in external affairs and an ultimate arbiter in internal affairs. These roles are not always unrelated. In an environment of external confrontation the limits of tolerated dissension get narrowed down, and the real or supposed external threat could become an argument for increased repression. Conversely, when internal dissension transgresses these limits, and when means for satisfying basic needs and aspirations are scarce, there could be a temptation to seek temporary refuge in domestic repression or in the escalation of foreign confrontation. Here Governments can get trapped in an impossible situation where an increasing burden of military expenditures further delays economic and social progress, freezes social structures and exacerbates social tension, while other policies seem to be precluded by the context of confrontation and arms race with neighbouring countries. The conjunction of external and domestic confrontation, both of them temporarily stabilized through military build-up but ultimately exacerbated by it, can give rise to a particularly precarious situation.

123. In the industrialized countries in the forefront of the principal arms race, external confrontation and internal policies may also

be coupled. The witch-hunts at the height of the cold war provide a vivid illustration. The worst excesses of this period have been overcome, but the atmosphere of "total defence" with its systematic channelling of national energies into international suspicion and confrontation and the tendency to regard opposition as unacceptable continues to exist. Détente, obviously, has an important role to play, but it must be stressed that if it is not followed by military reduction and disengagement, it cannot be expected to be a lasting and irreversible phenomenon.

124. In the 1971 report, it was already pointed out how the fears engendered by the nuclear arms race and the madness of having to live with stockpiles of nuclear weapons sufficient to destroy humanity altogether, kept in a state of constant readiness and subject to human or technical fault, have contributed to disaffection and disillusion, particularly among the young. There can be no doubt that the continuing arms race and the growth of violence in the world adds to the disaffection of many people, to their sense of futility and powerlessness, and turns them away from socially constructive ends.

125. The arms race not only entails heavy economic sacrifices. It also threatens and perverts democratic processes, and weakens those processes of social evolution which provide the only real hope for the future of mankind.

Chapter IV

INTERNATIONAL IMPLICATIONS OF THE ARMS RACE

126. The arms race represents a waste of resources, a diversion of the economy away from its humanitarian purposes, a hindrance to national development efforts and a threat to democratic processes. But its most important feature is that in effect it undermines national, regional and international security. It involves the constant risk of war engaging the largest Powers, including nuclear war, and it is accompanied by an endless series of wars at lower levels. It raises an ever greater barrier against the development of an atmosphere in which the role of force in international relations may be downgraded. In addition, it impedes relations between countries, affecting the volume and direction of exchanges, diminishing the role of co-operation among States and obstructing efforts towards establishing a new international economic order on a more equitable basis.

127. Recently the world community has been taking important stands of principle on the restructuring of international economic relations, defining its objectives in the Declaration and Programme of Action on the Establishment of a New International Economic Order, contained in General Assembly resolutions 3201 (S-VI) and 3202 (S-VI) of 1 May 1974, and in the Charter of Economic Rights and Duties of States, contained in Assembly resolution 3281 (XXIX) of 12 December 1974, as well as in Assembly resolution 3362 (S-VII) of 16 December 1975. Numerous other United Nations documents and documents by other organizations of the United Nations system have since been added and are being elaborated as in the case of the United Nations Conference on the Law of the Sea. Together these express a growing awareness of the profound inadequacy of the present international economic system and constitute steps towards outlining a new one.

128. There are considerable differences in approach to the question of a new economic world order. Some States have in mind a substantially new order, while others envisage mostly a development of the existing one. Nevertheless, there is on all sides a growing awareness of the fact that the polarization of wealth and poverty in the world can no longer be tolerated. The perpetuation and indeed the exacerbation of enormous disparities in levels of well-being is not only morally unacceptable but also exceedingly dangerous from the standpoint of future relations between States and of world peace.

129. Progress towards a new international division of labour, the setting up of mechanisms of co-operation to ensure greater stability and better prospects for the social and economic progress of all countries, particularly the developing ones, presupposes patient negotiations towards changes of a fundamental nature, based on unanimously acceptable solutions. In this process the continuation of the arms race, maintaining and deepening existing divisions, and perhaps leading to the temptation to impose solutions or maintain the *status quo* by force, would constitute a serious obstacle in the way of progress.

130. The international consequences of the arms race may be grouped under three headings, even though in practice these effects are in many ways interrelated. First and foremost, there is the strictly military aspect: on the one hand, a long series of wars, some of them of extreme destructiveness, seldom caused in any strict sense by the arms race, but very often inflamed by it; on the other hand, an ever-present possibility of nuclear conflagration. The new feature here is the growing awareness that the approaches adopted in the 1960s to deal with this threat will have to be set in a broader context and will have to be related to a wider programme of disarmament, one that ultimately aims at general and complete disarmament, if they are to restrain and reverse the arms race effectively. Short of a new departure it is to be feared that the Disarmament Decade will not produce satisfactory results.

131. Second, there are the economic effects (and, by implication, social effects) in the widest sense: the effects of the arms race and military expenditures on trade, on aid, on technological and scientific co-operation and on other kinds of exchange between countries. By diverting vast resources away from production and growth, and by contributing to inflation and the economic crisis which have affected many countries, the arms race directly and indirectly impedes the full development of international exchanges. In addition, the flow of trade and aid is distorted, in some cases very markedly, by interference from political and strategic considerations, resulting in the misallocation of resources on a global scale. The arms race thereby contributes to maintaining and widening the gap between and within developed and developing countries and impedes co-operation between States, socio-economic progress generally and the promotion of a new international economic order.

132. Third, there is the impact of the arms race on international political conditions. In an environment characterized by high military preparedness on all sides, conflicts, even minor ones, tend to be exacerbated and security considerations become salient in the policies of countries. This is an environment conducive to the creation of spheres of influence, in which local conflicts tend to become linked to regional or global confrontations and in which social and political developments are likely to be resisted if they seem to call existing alignments into question. The frictions arising from this rigidity at a time when the relative economic, political and military weight of countries changes more rapidly than ever are themselves possible sources of conflict.

133. Warfare has been a permanent feature of the period since the Second World War. Weapons have been in use on a significant scale virtually without interruption, more often than not in several places simultaneously. Casualties have been accumulating and total casualties since the Second World War has been many millions. To an overwhelming degree these conflicts have taken place outside the major industrialized regions of the world, although in many instances some major Powers have been directly involved and, virtually without exception, the means of warfare have been provided by these Powers. One source, using defining criteria which are open to debate, arrived at a total of 97 wars in the 24 years from 1945 to 1969.⁸⁹ A complete list would include a dozen or so that have been major wars by any standard. Several of them owe their violence, their comprehensive character and their extreme destructiveness to the context of international polarization and the ready availability of modern armaments which are features of the arms race. This is evidently the most important of all the costs of the arms race.

134. These wars, of great destructiveness as many of them have been, are nevertheless small and limited, both in space and in violence, compared with what would result from a nuclear war. The possibility of nuclear war remains the overriding danger of the arms race.

135. In chapter I it was shown that, from the point of view of technological developments now under way and of the strategic doctrines they may carry with them, the nuclear arms race may be moving into a phase of greatly enhanced danger. On the other hand, certain limited progress has been achieved towards reducing the risk of outbreak of nuclear war. These are certain specific agreements in the context of the SALT talks, the generally improved understanding of each other's posture and intentions which these consultations have brought about, and the general process of détente. It would, of course, not be possible to weigh these two factors, technological, on the one hand, and political, on the other, against each other for they will make their effect felt in different contexts. Some forms of nuclear war may have become less likely (war by sheer accident in particular), other, notably forms of nuclear war that are supposed to remain controlled and limited, may have become a much greater risk. The fact remains that the overriding priority now, as it was five years ago and 15 years ago, is the elimination of the nuclear threat.

136. The only way to deal with that threat is, of course, to take genuine measures of nuclear disarmament, measures that restrict further development and ensure the prohibition and liquidation of all nuclear weapons. Nothing less can effectively diminish the risk, and nothing less, it seems, can stop it from growing. For in addition to the technical

⁸⁹ I. Kende, *Local Wars in Asia, Africa and Latin America, 1945-1969*, Studies on Developing Countries, No. 60, Budapest (1972).

developments just noted there are other risks ahead. Short of nuclear disarmament it is unlikely that the further proliferation of nuclear weapons can be prevented in the longer run. If proliferation is to be halted, the nuclear-weapon States will have to demonstrate clearly that for them, too, these weapons have no political or military utility commensurate with the risks they involve.

137. Attempts to deal with the dangers of the arms race have not lacked, even though successes have been relatively modest so far. In the 1960s and continuing into the 1970s, these efforts were characterized by two main features: one was the priority given to partial measures aimed at preventing the arms race from moving into certain new directions; the other was the emphasis on détente, the assumption being that relieving suspicion and fear would not only diminish the risk of war, but would also remove one of the main factors fuelling the arms race.

138. The past decade and a half has produced a considerable number of agreements on arms limitation, including the Treaty Banning Nuclear Weapons Tests in the Atmosphere, in Outer Space and Under Water; the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies; the Treaty on the Non-Proliferation of Nuclear Weapons; the Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Seabed and the Ocean Floor and in the Subsoil Thereof; the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction; the Convention on the Prohibition of Military or any Other Hostile Use of Environmental Modification Techniques; the Treaty for the Prohibition of Nuclear Weapons in Latin America; the Soviet-American agreements on the limitation of strategic arms; and the Treaty between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Underground Nuclear Weapon Tests. It has also produced agreements between the United States and the USSR and between France and the USSR on the prevention of nuclear war. Although these treaties and conventions have contributed to some extent to a new climate of understanding, they have not proved equal to the task of slowing down the arms race or of significantly affecting the actual basis of armaments.

139. Partial and collateral measures can play a role in the cessation and subsequent reversal of the arms race, but it is becoming increasingly clear that for this to be the case they must be conceived as part of a broader programme, inscribed in a whole set of measures aimed at substantial disarmament in areas of weaponry of central military significance. If the partial measures are specifically designed just as measures to regulate an ongoing competition in armaments, the danger exists that they simply shift this competition in other directions.

140. In the mid-1960s, and the early 1970s, the partial measures achieved contributed to a climate of optimism, served to establish useful channels of communication, and demonstrated that agreements were possible, within limits at least. These measures thus undoubtedly contributed to promoting détente.

141. It is obvious that détente has had an important effect in relaxing the international climate, thereby diminishing the risk that conflicts in the periphery of the arms race or lesser conflicts involving the major Powers will escalate into nuclear war. By relieving the cold-war atmosphere between and within the main military alliances and helping to relax the rigid bipolarity of former years, détente also helped to promote exchanges of all kinds. Indeed, such exchanges are not only a result of détente, they are part of the process of détente itself, and continued relaxation of set patterns of relations between the main alliances, within them and within countries individually, as recognized in the Helsinki Declaration on Security and Co-operation in Europe, are both aspects, of, and pre-conditions for, continuing détente. By building international relations on a sounder basis détente has improved the conditions for beneficial intercourse between States, for the development of economic ties, and for increased scientific, technological and cultural exchanges. These are major, even decisive achievements, of the last decade or so, which must be vigorously pursued and strengthened.

142. While the overriding importance of détente deserves constant emphasis, so do the failures of this period. The fact that political détente has not been accompanied by corresponding measures of disarmament and military disengagement is its central weakness and a major cause of concern. Détente is being continuously assailed and undermined by the momentum of technological developments in armaments. It is essential that détente should not be merely a process involving the main protagonists, a process limited geographically to certain areas and limited in substance by an intense rivalry in the military field. For evidently a continuous build-up in armaments is incompatible with serious attempts to eliminate the threat of war and to strengthen beyond a very limited point the confidence among States which must be the foundation of genuine détente. If the arms race is not reversed, détente remains without a real basis, always in danger of sliding back into tension, suspicion, isolation and confrontation.

143. After more than a decade of attempts to curb the arms race it can be seen that these efforts were inadequate. In every important respect the arms race is continuing apace, while much talent and energy has been spent on what is now seen as issues of more marginal importance.

144. Genuine and widespread public concern about the dangers of the arms race may be one of the most important ways in which a new momentum could be imparted to efforts towards disarmament. On several occasions it has been seen how the public, when adequately in-

formed, was able to exert a moderating influence on developments in the field of armaments. On questions of armament and disarmament which engage the very survival of humanity the need for an active and informed opinion able to oppose all incitement to war and the need to stimulate and channel public concern in constructive directions is particularly great. The United Nations and other organizations have made important efforts to disseminate information on the arms race, to develop an international awareness of its dangers, and of the dangers of the nuclear arms race in particular, and to promote an understanding, free from comforting illusions, of the action which has been and could be taken. These efforts, requiring as they do the open and committed co-operation of the Member States, need to be continued and strengthened.

145. The second major consequence of the arms race for the international system is its effect on exchange generally, and economic transactions in particular. As already noted, war, major foreign military commitments and the drain on the economy inherent in large military expenditures has been one factor contributing to the disruption of the international monetary system and to sustained inflation in many countries, rendering the present recession more pervasive and more intractable.

146. The 1971 report already pointed to a number of these effects, stressing in particular how international trade was being inhibited by the continuation of the arms race. These problems have lost none of their importance. Evidently, there are other causes as well which are a hindrance to free exchanges, including discrimination, import restrictions and protectionism and, in some cases, more technical and practical difficulties. None the less, the ongoing arms race is one important factor restricting flows and distorting them. One particularly negative aspect of the arms race is the limitation of trade in so-called strategic commodities which may be anything from raw materials to advanced technology, in some cases goods of key importance for the civilian economy. Though they have been gradually slackened, important restrictions still exist and it is evident that some of them (relating to advanced electronics, propulsion systems and nuclear technology, for example) can perhaps be relaxed somewhat but are not likely to disappear altogether while armaments retain the role they have today. Another aspect of this question is that strategic embargoes may also be a means of forcing opponents to incur large expenditures. They may thus constitute a kind of economic warfare. Protectionist policies have in some cases been adopted to preserve a measure of self-sufficiency in agricultural production and in some sectors of manufacturing. Though other motives for protectionism are undoubtedly of greater importance, this adds to the deleterious effect of import restrictions on the exports of developing countries. In some cases, important although few in number, embargoes have been carried so far that they almost amounted to attempts at strangulation. When this has happened to

countries heavily dependent on foreign trade or on technical assistance it has meant a serious impediment to development.

147. The harmonious development of the increasing international interdependence, in scope and in intensity requires the abolition of barriers and the universalization of exchanges and of participation in the instruments and institutions for international exchange. The arms race constitutes an obstacle to this process, creating divisions among countries and groups of countries, and perpetuating existing barriers. As long as the arms race continues it is hard to imagine that a new international division of labour and new international commercial, monetary and financial order could be instituted in which all countries, without discrimination on military-strategic grounds, would have equal access to credit markets, raw materials and other means of economic development and co-operation.

148. Besides changes in the conditions of trade, one point most persistently stressed in documents and analyses pertaining to the new international economic order is the need for increasing development assistance in all its forms, not only in the form of official grants and loans on concessional terms, but also in the form of development-promoting measures with a concessionary component in such fields as trade in food and industrial goods, transfer of technology and many more. Measures towards disarmament would obviously improve the possibility for assistance in every respect. Indeed, for aid in the narrow sense, world-wide military expenditure is described by the Committee for Development Planning as "the single most massive obstacle" to development support.⁹⁰

149. The arms race has not only diminished the priority given to aid in the policies of donor countries, it has also distorted the flow of bilateral assistance, in some cases to a marked degree. For some donor countries there is little apparent relation between the urgency of the development needs of recipient countries, on the one hand, and the flow of bilateral aid to them, on the other.⁹¹ Instead, the relationship between aid provided and political considerations is in many cases very pronounced. There have been cases when the provision of aid served an ulterior purpose: to acquire influence or deny it to others, or to help obtain base facilities or other military-strategic advantages. This greatly diminishes the usefulness of the aid provided, not least because the poorest countries, the land-locked and otherwise disfavoured, are rarely those whose politico-strategic importance is greatest. In addition, when aid flows are distorted in this way by political con-

⁹⁰ *Official Records of the Economic and Social Council, Sixty-first Session, Supplement No. 6 (E/5793)*, para. 21.

⁹¹ Statistical evidence may be found in the fact that bilateral aid has primarily accrued to developing countries in the medium to higher income brackets (\$200-\$800 *per capita* and above \$800), whereas it has been much smaller on a *per capita* basis for the poorest countries. (See "Foreign Aid and Development Needs", E/AC.54/L.80.)

siderations related to the over-all arms race it may in some cases encourage recipient countries to get involved in the confrontations of outside Powers, thus adding more fuel to the arms race.

150. Present levels of development assistance are clearly inadequate measured against the needs, and they even fall far short of the targets, not overly ambitious, set in the International Development Strategy for the Second Development Decade. During the first half of the decade, from 1971 to 1975, official development assistance from the developed market economies amounted to 0.32 per cent of their combined gross national product, reaching not even half of the strategy target 0.7 per cent.⁹² Transfer to development assistance of funds equivalent to a mere 5 per cent of their current military expenditures would have been sufficient to meet the target fully.

151. Disarmament and development are by far the most urgent problems facing the world. It is therefore with good reason that the General Assembly and other United Nations bodies have repeatedly stressed the connexion between them: the fact that these two tasks are likely to succeed together, or else to fail together. In section A, paragraph 5, of the International Development Strategy, the Assembly stated that "the success of international development activities will depend in large measure on improvement in the general international situation, particularly on concrete progress towards general and complete disarmament under effective international control". It further stated that "progress towards general and complete disarmament should release substantial additional resources which could be utilized for the purpose of economic and social development, in particular that of developing countries". In other resolutions it is the obligations of States which have been stressed. In article 15 of the Charter of Economic Rights and Duties of States, the General Assembly stated that "all States have a duty to promote the achievement of general and complete disarmament under effective international control and to utilize the resources released by effective disarmament measures for the economic and social development of countries, allocating a substantial portion of such resources as additional means for the development needs of developing countries".

152. Such calls have had no effect in practice. The partial measures of arms limitation achieved so far have not led to arms reductions or to savings in military budgets of a kind to have measurable economic implications. Proposals for actual reductions in military budgets have been adopted by the General Assembly, but have not been implemented

⁹² Information on the financial contributions of the centrally planned economies is too scanty to permit meaningful comparisons. Disbursements by OPEC members to other developing countries have become a significant contribution to the total flow of assistance. The concessional component of disbursement in 1974 was \$3.4 billion or 1.9 per cent of the gross national product of OPEC members. See *Official Records of the Economic and Social Council, Sixty-first Session, Supplement No. 6 (E/5793)*, para. 34.

so far.⁹³ The military expenditures of the main military spenders diminished through the first half of the 1970s by \$11 billion in real terms (in 1970 prices), but despite this, official development assistance provided by the developed market economies⁹⁴ actually diminished. In 1970 prices, it fell from \$6.7 billion in 1970 to \$6.6 billion in 1975.

153. This poor performance does not affect the general validity of the conclusion which has been repeatedly stressed in this and in other reports⁹⁵ that disarmament and development are closely related in material fact and that it is the duty of States to promote both goals and, whenever possible, to let progress towards the former benefit the latter. But as a means of providing funds for development, the tying together of these processes has not been a success. So dismal is the performance of the Disarmament Decade and so urgent the needs of the Development Decade that it is now essential to move beyond proclamations towards the actual reallocation of resources, basing oneself on whatever approaches seem most promising.

154. The link between disarmament and development was analysed in detail in a recent report.⁹⁶ Its general conclusions and recommendations retain their full validity and need not be repeated here. The report examined both the link with respect to economic resources in general and the link with respect to specific resources which would be affected as a result of certain partial measures. It emphasized that in case of general and complete disarmament—and also, to a lesser extent, when the cuts in military expenditure are significant but less than total—economic assistance granted by developed to developing countries could and should be greatly increased and would merit high priority in the allocation of released resources. It pointed out that since military expenditures now absorb a larger proportion of the combined GNP of developed than of developing countries, a general (proportional) reduction in military expenditures would have to be accompanied by a simultaneous increase in the fraction of GNP in the advanced donor countries allocated to international development assistance to prevent a widening of the economic gap between countries. Calculations in

⁹³ General Assembly resolution 3093 A (XXVIII) of 7 December 1973 recommended that all States permanent members of the Security Council should reduce their military budgets by 10 per cent from the 1973 level during the next financial year; appealed to those States to allot 10 per cent of the funds so far released for the provision of assistance to developing countries; and expressed the desire that other States, particularly those with a major economic and military potential, should act similarly. Pursuant to a second resolution (3093 B (XXVIII)) a report examining this and analogous proposals, *Reduction of the military budgets of States permanent members of the Security Council by 10 per cent and utilization of part of the funds thus saved to provide assistance to developing countries* (United Nations publication, Sales No. E.75.I.10), was prepared by a group of experts appointed by the Secretary-General.

⁹⁴ See foot-note 92 above.

⁹⁵ *Disarmament and Development*, Report of the Group of Experts on the Economic and Social Consequences of Disarmament, New York, 1972, United Nations publication, Sales No. E.73.IX.1.

⁹⁶ *Ibid.*

annex II of that report (based on figures for the United States) indicated that the number of industries which could anticipate declining demand as a result of disarmament would be less if a substantial part of the released funds were used to increase assistance to developing countries, rather than being absorbed in domestic personal consumption. Similar conclusions were seen to hold in the case of demand for a number of raw materials, indicating the benefits to be derived from as close a connexion as possible between the release of resources in disarmament and increased allocation of resources to international development assistance.

155. The transfer of technology and the expansion of research related to development and to the problems of developing countries is another issue which figures prominently in efforts to establish a new international economic order. To overcome the enormous disparities in research and technological capability now existing in the world the access of developing countries to technological know-how must be greatly facilitated. Their research capacity, individually or collectively, must be greatly increased and a greater proportion of research and development work in the industrialized countries must be directed towards their needs.⁹⁷

156. The arms race constitutes a major impediment to such expansion and transfer. On the one hand, there is an enormous diversion of scientific and technological resources to military ends which has already been described. Not only are these resources heavily concentrated in a few industrialized countries, they are also sharply focused on military projects. Most important, perhaps, the flow of increasingly sophisticated weapons and military equipment to developing countries, which is an inevitable corollary of the central technological arms race, takes a heavy toll of the already modest scientific and technological resources of developing countries.

157. There is another equally serious aspect to this question which vividly illustrates the contradiction between an arms race bent on technological competition and the construction of a more equitable world order. The countries leading the race will naturally seek to retard the proliferation of the latest technologies of actual or potential military significance. This could be in order to gain a military advantage vis-à-vis opponents and perpetuate politico-military leadership vis-à-vis allies (examples relating to the transfer of computer technology and a number of others could be given in illustration of both aspects), or it could be part of an endeavour to slow down the arms race and to help countries on its periphery to avoid pointless and ruinous local arms races. Endeavours in the 1960s to prevent the acquisition of supersonic aircraft by the countries of Latin America is one of the not very numerous examples

⁹⁷ See, for example, J. Tinbergen (co-ordinator), *Reshaping the International Order*, New York, 1976, p. 152.

of deliberate and sustained attempts of this kind which have been successful, at least for a while.

158. Restraint of this kind, imposed unilaterally by supplying countries, by potential recipients in some specific area, or multilaterally by suppliers and potential recipients acting in concert, is in many cases obviously beneficial for everyone.⁹⁸ But problems arise when technologies are applicable both for military purposes and for important civilian ends, the question of nuclear technology being the outstanding example. For such dual-purpose technologies attempts to control the arms race, not by abolishing weapons systems but by confining their possession to a limited set of countries, will inevitably come into conflict with the aim of making existing technology available to all countries in a non-discriminatory manner. This dilemma between contradictory attitudes towards free dissemination of technology is, of course, inherent in the arms race. Temporary and partial measures involving a distinction between haves and have-nots may in some cases be possible, but there is no effective way out other than genuine disarmament. Short of this the development of internal co-operation in the peaceful uses of available technologies, without barriers and without discrimination, as implied in the quest for a new international order will necessarily remain limited.

159. The third major aspect of the arms race in terms of the international system is its political effects in general, and its effect in fostering and exacerbating conflict in particular. In an international environment dominated by an arms race on the scale of the last decades, military-strategic considerations tend to shape the over-all relations between States, affecting to a greater or lesser extent all other relations and transactions. Foreign policy and international exchanges generally tend to become subordinated to "security" considerations in the widest sense. But there is no natural limit to the precautions that may seem necessary. In this way, the creation of spheres of influence, local, regional or global, and sometimes interference, direct or roundabout, in the domestic affairs of other States becomes a natural corollary of a world-wide arms race. Unless an end is put to the arms race, unless military troops and bases are withdrawn from the territories of other States, and unless a vigorous process of disarmament and, particularly, nuclear disarmament is initiated, there can be no guarantee that relations among States would be, in fact, based on the principles of national independence and sovereignty, of non-interference in the domestic affairs of other States, of full equality of rights, of non-resort to force or to the threat of force and of the right of every people to decide its own destiny.

⁹⁸ Apart from the Non-Proliferation Treaty, the only noteworthy current example is the effort being conducted since 1974 by the six Andean Pact States (Bolivia, Chile, Colombia, Ecuador, Peru and Venezuela) and Panama and Argentina to limit by common accord their arms acquisitions in conformity with the Declaration of Ayacucho. No concrete results have come from it so far.

160. Great preponderance of military power as possessed by some of the major industrialized countries and as is perhaps emerging in some regional contexts will sometimes lead countries to adopt ultimate and rigid policies vis-à-vis other countries or to the use of force, the threat of force or simply an ostensible display of force. As a result of the arms race, fear and suspicion are generated along some axes, but along others, special, favoured relationships develop. In some cases these are no less conflict-promoting and no less dangerous. There may occur, on the one hand, a transfer of the conflicts of the central powers to peripheral powers and, on the other hand, an involvement of central powers in local conflicts. This is one of the mechanisms through which central and peripheral confrontations may become linked in such a way as to enhance the dangers of both.

161. While it is probably not true to say that the arms race causes conflicts in any strict sense—the causes of conflicts are ultimately political, economic, etc.—a context of intense military preparedness can, of course, greatly enhance them, cause them to erupt into war, to spill over into neighbouring countries and block their peaceful settlement. The arms race produces a political climate in which minor incidents can be blown up to international crisis proportions and in which even insignificant disputes which under other circumstances could have been easily settled by negotiation become matters of great principle and the object of armed clashes.

162. It is customary to regard the arms race as a situation countries are drawn into involuntarily and are carried along by apprehensions caused by the military programmes of others. There is, of course, a considerable element of truth in this. Threats, pressures and interventions have been sufficiently common in recent years to indicate, on the one hand, that some countries face genuine security risks and, on the other hand, that for some countries, the use of military power to achieve political ends has not been given up altogether. Such use can take many forms, some more bellicose than others, some more immediately dangerous than others, ranging from armed intervention to mere ambiguous threats such as a naval presence which others may perceive as a means of interference or intimidation.

163. The arms race tends to render the international political environment more rigid and more resistant to change. It fosters concerns for the political and social options chosen by other countries, in particular by those countries that are deemed to have strategic importance, and it promotes a pattern of alliances and alignments that may reinforce confrontation and, in some cases, domination. Under such conditions processes of social transformation or emancipation are likely in many cases to be resisted. They become painful processes, postponed for too long, and they may end in protracted and destructive conflict, as several of the longest and most painful wars of the recent past have shown.

164. The task of eliminating the remnants of colonialism has been one of the major sources of war and conflict in the past decade. While the process of establishing national sovereignty has been completed in the vast majority of cases, there remain, nevertheless, a number of unresolved problems and disputes throughout the world. It is inherent in the very idea of rapid development and of a new international economic order that many traditional patterns and relationships, domestic and international, will have to be changed. This is one reason why the rapid development and proliferation of modern military technology, the rapid increase in the number of countries possessing highly capable weapons systems, suited for offensive as well as defensive roles must cause apprehension for the future. For this reason too, a halt to the arms race at its centre, the necessary precondition if it is to be halted effectively at its periphery, has become an urgent imperative.

165. Indeed, in recent years the international transfer of arms has grown particularly dangerous. For most suppliers commercial considerations as against a coherent policy have become predominant to an unprecedented degree and the only remaining constraint appears to be the resources recipients are able and willing to commit to the purchase of armaments. As a result, the military scene in many parts of the world has been changing rapidly. And rapid change in this field, irrespective of whether the balance of real military capability fluctuates, inevitably generates an atmosphere of heightened tension and instability. In several important cases the sophistication of recently delivered equipment is so far beyond the technical resources of the recipient country that the equipment cannot be used or serviced without comprehensive assistance from the supplying country, particularly in the form of technical and managerial personnel. The intimate involvement of foreign personnel (usually nationals of the main supplying countries) in the military programmes of recipient countries and the fact that such assistance will be required over extended periods increases the risks that supplying countries will become embroiled in local conflicts.

166. While traditional forms of military integration and polarization, alliances, bases and the stationing of troops on foreign soil remain, new ones are in the process of being established. Supplementing the growing volume of arms transfers, various forms of international co-operation in arms production are gaining importance, even though only the contours of this process are visible so far. Among industrialized countries the tendency is towards co-production, several countries pooling existing facilities to produce different components of one particularly costly and sophisticated weapons system, and, less frequently, collaboration (and cost-sharing) in design and development. Among developing countries the usual pattern is to establish a local maintenance capability and then work backwards through repair, assembly of imported components, local production of some of the components, and so on. More recently, some countries have been able to accelerate this process by

purchasing complete production facilities, the foreign contractor, firm or government, providing the whole system: design, plant, know-how and some of the parts for the finished weapon.

167. Seen from a military and economic angle, this may be regarded as merely another means of arms procurement, possibly providing some independence from external arms suppliers and saving foreign exchange, even though the absolute cost will usually be higher. But seen from a social and political angle, something much more important and radically new is involved. In some cases, it could be the beginning of a process whereby the military-industrial complexes of the supplying countries expand beyond their own borders, take root abroad and reproduce the whole network of relations between industry, producers and sub-contractors, unions, Government and armed forces in the new environment. With the transfer of complete operation weapons systems and the provision of military advisers, as with other forms of military co-operation, relations between recipient and supplier tend to remain confined to the armed forces. But in the types of multilateral production or dependent domestic production considered here, it is the whole set of mutually supportive relations and of vested interests in the perpetuation of the armaments process which are built up and which spread through society, far beyond the military establishment proper. While it is not likely, even in the long run, to provide any genuine independence from the main arms producing countries, this multinational expansion of military-industrial complexes could in time become a significant impediment to effective arms limitation and disarmament in the regions where it is taking place. This underlines once more the urgency of achieving progress towards disarmament. The magnitude and complexity of the problems will only increase over time.

168. The preparation and implementation by all countries of a comprehensive programme of disarmament, and first of all nuclear disarmament, is an urgent necessity to avert the danger of nuclear war, foreclose use of force or the threat of the use of force, establish a lasting peace; eliminate the factors opposing the democratization of international relations and build step by step a new international economic, political and social order.

Chapter V

CONCLUSIONS AND RECOMMENDATIONS

169. The main task of this report has been to analyse the social and economic consequences of the arms race. What emerges with particular force is the multiplicity of those consequences, not only in the field of security proper, but in all aspects of civil life. The social, political, technological and industrial options of countries are affected by their participation in the arms race. International policies, not only in the military field, but also in the fields of international trade and of co-operation and exchanges generally, are influenced by the climate of confrontation and apprehension engendered by the arms race. Many of the major problems faced by the world community, problems of development, economic imbalance and inflation, pollution, energy and raw materials, trade relations and technology, and so forth, are enhanced and exacerbated by the arms race. Progress in other areas such as health, education, housing and many more is delayed owing to lack of resources.

170. This question of the relationship between armament and disarmament, on the one hand, and other aspects of social, economic and political development, on the other, has received all too little attention in the past. This report has attempted to indicate these interrelations, but an adequate analysis would require much deeper study. It is remarkable, for example, that recent studies of the future of the world economy, analyses relating to the establishment of a new international economic order and the United Nations conferences on a variety of contemporary problems which have been held in recent years have in most cases omitted consideration of the implications of the arms race altogether, despite its obvious and massive implications in each of these cases. From every point of view it would be an advantage if in such studies and analyses and in the elaboration of programmes and recommendations the consequences of and for the arms race were specifically considered. Both aspects of the problem need to be taken into account: on the one hand, the volume of resources consumed on the arms race and the socially constructive uses to which they could be put; and on the other hand, the social, political, economic and institutional processes, both domestic and international, whereby changes in military policies affect the future course of development in other fields and are themselves affected by it.

171. Discussion of the consequences of the arms race—social, economic and military-political—presupposes some conceptual view of the phenomenon itself. Likewise, effective progress towards disarmament presupposes some understanding of the forces and processes that drive

the arms race along. There is a growing body of literature on this question, but it is mainly confined to consideration of one or a few countries and to exposition of the one or the other particular model of the armaments process. The impact on disarmament efforts has therefore been virtually non-existent. What seems to be needed is not only an elaboration or integration of these several approaches to obtain a clearer understanding of the interplay of forces that sustain the arms race, but the gathering together of these separate strands in a way that could inform and guide action. What is even more needed is a clear outline of the views of different countries and groups of countries as to what constitutes the fundamental mechanisms of the arms race. Effective action to reverse it would seem to presuppose some agreement as to where the problem lies and what it consists of. It is not the task of this group, whose terms of reference were to examine the consequences of the arms race, to do more than call attention to the fact that there is here an area where further study is called for.

172. It has been stressed throughout this report that the two most important goals of the international community, disarmament, on the one hand, and development, on the other, which the States Members of the United Nations are committed to pursue vigorously, each in its own right, are in fact intimately linked. Development at an acceptable rate would be hard if not impossible to reconcile with a continuation of the arms race. Research and development is one area where the misdirection of efforts is glaring. In this as in other respects, vast resources, badly needed for development, are being consumed as countries make ever greater sacrifices for military purposes.

173. Conversely, substantial progress in the field of development is increasingly understood to be essential for the preservation of world peace and security. These cannot in the long run be preserved in a world where large and growing economic gaps separate the countries of the world. Genuine security cannot be assured by the accumulation of armament but only through disarmament, co-operation and the growth of exchange and interdependence in a world of diminishing inequalities.

174. Substantial progress in the field of disarmament would represent a decisive turning point as regards development, imparting new momentum to efforts in this direction and greatly facilitating progress in this field. Progress towards disarmament would release internal material, financial and human resources both in developed and in developing countries and would permit their redeployment to purposes of development. In the case of many developing countries, these resources are relatively small in absolute terms, but in other cases they are very substantial, and in all cases the impact on development would be significant. The relaxation of the climate of fear, hostility and confrontation which progress towards disarmament would bring about, would remove some of the barriers now hampering international exchanges

in general and the free circulation of raw materials and advanced technology in particular, and would greatly facilitate the free choice by each country of its particular path towards development. Last but not least, substantial progress towards disarmament would represent major savings in industrialized countries and would make possible substantial increases in development assistance. In fact, disarmament should be so designed that this close connexion between disarmament and development gets full recognition. Provisions to ensure the transfer to development purposes of part of the resources released, provisions to ensure that measures of armaments limitation are so designed that they do not impede the transfer of technology for peaceful ends and other similar provisions must be an integral part of disarmament measures.

175. The 1970s were proclaimed Disarmament Decade, but through the first two thirds of that decade progress has been meagre and fell far short of what the vast majority of members of the international community would genuinely prefer. A number of agreements, several of them of great importance in their own right, have been reached, but progress has been much too slow to constrain the momentum of the arms race to any significant extent, let alone reverse it. If results in the future are to be less disappointing than in the past the reasons for this failure must be carefully examined. In this report a number of factors which may be important in this respect have been considered: the inertial forces which tend to develop in a qualitative arms race, the system of reciprocal compulsion it generates, and the fact that partial agreements on limitations are easily overtaken by developments in other areas of the arms race.

176. All of this points to one of the serious short-comings of disarmament efforts for over a decade: the lack of a comprehensive scheme in which partial measures would find their place and, supplementing each other, would add up to a coherent strategy. General and complete disarmament under effective international control must remain the ultimate goal. Agreements to regulate and confine the arms race in the meantime are means and, in some cases, pre-conditions for achieving that goal, but they cannot take its place. Effective restraining measures in one field, even if they are adopted, can be circumvented, and in the longer run new countries would be likely to enter the competition. In this context, it is imperative that negotiations on general and complete disarmament should receive greater and more urgent attention that has been the case in the past.

177. Effective progress towards disarmament presupposes the elaboration of an over-all plan, persuasive in concept and workable in application, a "Strategy for Disarmament" as it were. This must be based on a thorough assessment of the problems involved, the forces propelling the arms race and the experience of the past. It should involve specification of priorities, decision on targets and adoption of programmes and, where appropriate, time-tables. This strategy must be comprehensive enough

to ensure a fair and equitable response to the concerns of every country, and flexible enough to permit taking realistic and concrete steps in the immediate future, in intermediate stages and in the final stage. In short, a framework is needed within which endeavours can be co-ordinated and against which progress can be measured. This is no less essential in the field of disarmament than it is in the field of development, or in any other field where a multiplicity of efforts is to lead effectively to a common goal.

178. It is not the task of this group to outline such a strategy, but some points of particular importance emerge from our work. Measures of disarmament and military disengagement affect the vital interests of all States, directly or indirectly. All States must necessarily be engaged in the task of eliminating the sources of conflict and tension, and of moving rapidly to the adoption and implementation of disarmament measures under effective international control. The determination of tasks and priorities must engage the participation of all States, even though specific measures may often be negotiated more effectively in regionally or otherwise limited fora.

179. Indeed, to impart a new momentum to disarmament efforts it seems necessary not only to engage all countries in these endeavours on a basis of equality, but also to involve the peoples of all countries more actively and in a more coherent and organized fashion than has been the case hitherto. A variety of movements and organizations—political, professional, religious and others—can play an important role in this respect, and have in fact done so in the past. The negative consequences of the arms race, in terms of endangering their existence and in terms of social and economic sacrifices, affect all peoples of the world. They have an obvious right to information about the military policies and programmes of Governments and their implications. Much of the secrecy in this field is not justified by military requirements. In some cases, it results from mere tradition, in others, it serves such purposes as shielding questionable or unnecessary armaments programmes from public scrutiny and public criticism. Without endangering the security of any country much greater openness of information could and should be applied in this field.

180. Given the character of the present arms race, effective disarmament will presuppose progress in two directions simultaneously: curtailment of the qualitative arms race, and reductions of military budgets. The first involves the erection of boundaries against further developments in weaponry. The agreements on biological weapons and on anti-ballistic missile systems are steps in this direction. Responsibility for continued and more rapid progress in this respect overwhelmingly rests with the main military Powers and with the two largest Powers in particular, which are alone in producing the full range of modern weapons and where most innovations in military technology and all innovation in nuclear weapons and their means of delivery originate.

As is evident from chapter I, it is particularly important that mutual limitations agreed upon by the largest Powers should involve important qualitative limitations of nuclear-weapon systems and should involve curtailment of military research and development.

181. The second major task of immediate urgency is to bring about substantial reductions in the military budgets of all countries and particularly of those whose military budgets are the highest. All countries share responsibility for taking prompt steps in this direction. In conjunction with this, steps must be taken to facilitate the conversion of industries and installations to civilian ends. Not only would substantial budget reductions mean a turning point in efforts to achieve disarmament and to diminish the risks of war, it would also release internal resources for the social and economic development of countries and greatly improve the prospects for the necessary expansion of aid to developing countries. What is needed is the adoption of a specific time-schedule for gradual but substantial co-ordinated reduction of budgets, first of all of those of the largest and most heavily armed countries and of strategic rivals locked in confrontation, specifying criteria and proportions for these reductions and ensuring that they are irreversible and that the means saved are in fact allocated for peaceful purposes. If such cuts in military expenditure are not accompanied by any further specifications, it is to be expected that they would in many cases primarily affect the size of conventional armouries and of standing forces. Indeed, countries able to do so might be tempted to compensate a decline in numbers by improved performance, in other words by a more vigorous pursuit of the qualitative arms race. This again indicates the importance of co-ordinating partial measures adopted in different fields.

182. Nuclear disarmament must be given the highest priority both because of the intolerable threat posed by nuclear weapons, and because current and foreseeable developments in their means of delivery and in the doctrines governing their use, and the prospect of their proliferation to new States will enhance this threat and could make disarmament vastly more difficult in the future. As regards nuclear weapons proliferation, regional limitations and restraints, such as the establishment of nuclear-free zones, would constitute important steps. An important step would also be the conclusion of a comprehensive nuclear test ban treaty. Progress in the direction of nuclear disarmament would be greatly facilitated by agreement on certain targets and time-schedules for phased reductions in the nuclear arsenals and for outlawing the use, development, production and possession of these weapons.

183. Finally, regional disarmament and disengagement designed to diminish the sources of tension and conflict must be part of a comprehensive approach. There is need, on the one hand, for general targets regarding military disengagement on land and on the seas, dismantling of military blocks and withdrawal of troops and bases from foreign

territories, and, on the other hand, for immediate consideration of specific areas and regions, such as Central Europe, the Middle East, the Indian Ocean and the Mediterranean, taking full account of the precise character of the security problems of the countries concerned. Progress in these areas is again linked to or even conditional upon progress in the limitation of the arms race of the main Powers and their regional disengagement. It should be borne in mind that the bulk of the world's military expenditures is being devoted to the accumulation of conventional arms. The build-up of conventional arms in many parts of the world in recent years has generated increasing concern. Without denying the overriding importance of nuclear disarmament, which is undoubtedly the most urgent task of our time, nor the inalienable right of every sovereign State of self-defence, it should be stressed that maybe the time has come to study this problem thoroughly and to seek feasible ways to formulate international agreements on the transfer of weapons.

184. Progress towards disarmament, it has been indicated, will require systematic co-ordination and planning with the participation of all States. This points, on the one hand, to the need for more effective means at the international level for information, research and evaluation on questions of disarmament to enable all Member States, not only the largest ones, to obtain effective insight and to take initiatives in questions of disarmament. On the other hand, the United Nations, and first of all its plenary organ, the General Assembly, whose task it is to harmonize the efforts of States in the attainment of their common goals, should be able to fulfil its role of over-all guidance in the field of disarmament more effectively than it has been able to do in the past. Of great importance in this respect could be the special session of the General Assembly to be held in 1978. It is also to be noted that consideration has been given by the General Assembly to the convocation of a World Disarmament Conference.⁹⁰ There is also a need for expert advice and assistance on a more continuous basis to follow developments closely, to advise the General Assembly, the Secretary-General and Member States on questions of disarmament, and to assist in the elaboration, specification and adjustment of targets and programmes. Improvement of the machinery of the United Nations in this direction appears to be necessary if the world Organization is to fulfil its task in the field of disarmament.

⁹⁰ See General Assembly resolutions 2030 (XX) of 29 November 1965, 2833 (XXVI) of 16 December 1971, 2930 (XXVII) of 29 November 1972, 3183 (XXVIII) of 18 December 1973, 3260 (XXIX) of 9 December 1974, 3469 (XXX) of 11 December 1975 and 31/190 of 21 December 1976.

ANNEXES

Annex I

GENERAL ASSEMBLY RESOLUTION 3462 (XXX) OF 11 DECEMBER 1975

3462 (XXX). ECONOMIC AND SOCIAL CONSEQUENCES OF THE ARMAMENTS RACE AND ITS EXTREMELY HARMFUL EFFECTS ON WORLD PEACE AND SECURITY

The General Assembly,

Having considered the item entitled "Economic and social consequences of the armaments race and its extremely harmful effects on world peace and security",

Recalling its resolutions 2667 (XXV) of 7 December 1970, 2831 (XXVI) of 16 December 1971 and 3075 (XXVIII) of 6 December 1973 on the question,

Deeply concerned that, despite the repeated requests by the General Assembly for the implementation of effective measures aimed at its cessation, the arms race, particularly of nuclear armaments, has continued to increase at an alarming speed, absorbing enormous material and human resources from the economic and social development of all countries and constituting a grave danger for world peace and security,

Noting that, since the preparation of the report of the Secretary-General entitled *Economic and Social Consequences of the Arms Race and of Military Expenditures*,^a new developments have taken place in the fields covered by the reports that are of particular relevance in the present economic and political conditions of the world,

Considering that the ever-spiralling arms race is not compatible with the efforts aimed at establishing a new international economic order, as defined in the Declaration and the Programme of Action on the Establishment of a New International Economic Order, contained in General Assembly resolutions 3201 (S-VI) and 3202 (S-VI) of 1 May 1974, in the Charter of Economic Rights and Duties of States, contained in Assembly resolution 3281 (XXIX) of 12 December 1974, as well as in Assembly resolution 3362 (S-VII) of 16 September 1975, and that these efforts imply more than ever the resolute action of all States to achieve the cessation of the arms race and the implementation of effective measures of disarmament particularly in the nuclear field,

Conscious that, disarmament being a matter of grave concern to all States, there is a pressing need for all Governments and peoples to be informed about and understand the situation prevailing in the field of the arms race and disarmament, and that the United Nations has a central role in this connexion in keeping with its obligations under the Charter of the United Nations,

Recalling that in its resolution 3075 (XXVIII) the General Assembly requested the Secretary-General to pursue the study of the consequences of the arms race, paying special attention to its effects on the economic and social development of nations, as well as on world peace and security, in order to enable him to submit, upon request by the Assembly, an up-to-date report on that matter, on the basis of the information released by Governments,

^a A/8469/Rev.1 (United Nations publication, Sales No. E.72.IX.16).

1. *Calls again upon* all States, as well as the organs concerned with disarmament issues, to place at the centre of their preoccupations the adoption of effective measures for the cessation of the arms race, especially in the nuclear field, and for the reduction of military budgets, particularly of the heavily armed countries, and to make sustained efforts with a view to achieving progress towards general and complete disarmament;

2. *Requests* the Secretary-General to bring up to date, with the assistance of qualified consultant experts appointed by him, the report entitled *Economic and Social Consequences of the Arms Race and of Military Expenditures*, covering the basic topics of that report and taking into account any new developments which he would consider necessary, and to transmit it to the General Assembly in time to permit its consideration at the thirty-second session;

3. *Invites* all Governments to extend to the Secretary-General their support and full co-operation to ensure that the study will be carried out in the most effective way;

4. *Calls upon* non-governmental organizations and international institutions and organizations to co-operate with the Secretary-General in the preparation of the report;

5. *Decides* to include in the provisional agenda of its thirty-second session the item entitled "Economic and social consequences of the armaments race and its extremely harmful effects on world peace and security".

Annex II

MILITARY BUDGET EXPENDITURE COMPARED WITH OTHER STATISTICS: ANNUAL AVERAGES, 1973-1975

The table below is presented in three parts: A. Developed market economies, B. Developing market economies, and C. Centrally planned economies. These data have been extracted from various issues of the United Nations *Statistical Yearbook* and *Yearbook of National Accounts Statistics*, and wherever possible have been supplemented by data taken from replies of Governments to the questionnaire of the Secretary-General dated 10 August 1976.^a

Information concerning military expenditure is contained in the official public accounts of central Governments. Countries differ, however, in their definitions of military expenditure, and information concerning their methods of classification is commonly not available. It is therefore impossible in many instances to determine the content of the official statistics from an economic and social point of view. Some expenditures that would be considered as military from this viewpoint may be excluded from the official data, while others that would be considered as non-military may be included. In addition, there are commonly differences within countries in the basis of pricing of military output as compared with that of the output of the rest of the economy. These differences alone, even if the coverage of the expenditure statistics were appropriate, would make it impossible to indicate with any precision the proportion of resources devoted to military purposes. Furthermore, different countries have different economic structures and patterns of prices, so that in comparing countries one would obtain different ratios of military expenditure to domestic product and its components merely from using the different price patterns. For all these reasons, official statistics of military expenditure have only limited value as a basis for measuring the economic burden imposed by the armaments race.

This table includes the most readily available official statistics on military expenditure and compares these with domestic product fixed capital investment, and central government expenditures on education and health. In accordance with usual statistical practice, the concept of domestic product in parts A and B is different from that in part C. In parts A and B domestic product includes output originating in both "material production" and services. In part C domestic product includes output originating in material production only. A further difference is that domestic product in parts A and B is gross, depreciation not having been deducted from gross investment, while material product in part C is net of depreciation. Accordingly, military expenditure is compared with a more broadly defined measure of product in parts A and B than in part C. For more detailed definitions, reference should be made to the United Nations publication, *A System of National Accounts*.

Data on central government expenditures on education and health shown in the table have somewhat limited value for international comparisons owing to the fact that expenditures of regional governments and private institutions in the market economies are not covered, while in the centrally planned economies the national Governments are largely responsible for education and health, so

^a For the replies of Governments, see A/32/88/Add.1.

that such expenditures tend to be much more fully covered. Even among the market economies the figures are not strictly comparable for reasons of diverse definitions and coverage.

MILITARY BUDGET EXPENDITURE COMPARED WITH OTHER STATISTICS (ANNUAL AVERAGES, 1973-1975)
A. *Developed market economies*

Country	Currency unit	3	4	5	Military budget expenditure as a percentage of		Central government expenditure as a percentage of GDP for	
					Gross domestic product at current prices	Gross fixed capital formation	Gross domestic product	Gross fixed capital formation	Education	Health
I	2	3	4	5	6	7	8	9
AFRICA								
South Africa	Million rand	500.3	22 558.7 ^a	6 285.3 ^a	2.2	8.0	1.2	0.4
NORTH AMERICA								
Canada	Million Canadian dollars	2 500.7	143 947.3	33 343.3	1.7	7.5		
United States	Billion dollars	80.1	1 407.0	245.7	5.7	32.6	7.0 ^b	7.5 ^b
ASIA								
Israel	Million I. pounds	17 946.0	57 420.0	17 387.7	31.3	103.2	5.0	2.1
Japan	Billion yen	1 002.7	129 703.3	43 568.7	0.8	2.3	1.4	1.1
EUROPE								
Austria	Billion schillings	6.3	600.4	165.3	1.0	3.8	3.7	0.2
Belgium	Billion francs	53.6	2 047.7	448.7	2.6	11.9	7.0	0.9
Denmark ^b	Million kroner	3 327.7	164 941.3	36 831.0	2.0	9.0	3.9	3.1
Finland	Million marks	1 186.3	82 981.0	24 039.3	1.4	4.9	4.5	2.3
France	Billion francs	38.9	1 276.7	306.7	3.0	12.7		
Germany, Federal								
Republic of	Billion D. marks	30.0	991.1	224.5	3.0	13.4	...	...
Greece ^b	Billion drachmas	22.6	477.0	122.0	4.7	18.5	1.8	1.0
Ireland ^b	Million pounds	34.0	2 581.7	620.9	1.3	5.5	4.5	2.9

EUROPE (continued)

Italy	Billion lire	2 129.7	97 913.3	21 264.7	2.2	10.0	3.7	0.2 ^d	
Luxembourg	Million francs	704.6	79 513.3	22 194.0	0.9	3.2	4.2	...	
Netherlands	Million guilders	6 372.3	186 860.0	41 170.0	3.4	15.5	7.8	0.3	
Norway	Million kroner	4 179.0	129 426.3	41 967.3	3.2	10.0	3.6	0.6	
Portugal ^b	Billion escudos	17.3	283.2	56.4	6.1	30.7	2.0	...	
Spain ^b	Billion pesetas	69.2	4 160.0	989.7	1.7	7.0	1.8	...	
Sweden	Million kronor	8 294.0	252 543.7	54 195.0	3.3	15.3	3.9	1.4	
Switzerland	Million S. francs	2 721.6	136 986.7	36 886.7	2.0	7.4	1.0	...	
United Kingdom	Million pounds	4 253.7	85 448.3	17 086.3	5.0	24.9	6.1	4.7	
OCEANIA									
Australia	Million A. dollars	1 301.0	60 311.0	14 320.7	2.2	9.1	0.4	1.5	
New Zealand	Million N.Z. dollars	147.2	9 772.7	2 398.3	1.5	6.1	3.8	4.1	

B. Developing market economies

AFRICA

Central African									
Empire	Billion, CFA francs	1.4	57.1	8.9	2.5	15.7	2.8	1.1	
Egypt ^b	Million E. pounds	...	3 678.7	502.3	...	...	5.2	1.7
Ethiopia ^b	Million birr	99.7	5 116.3	573.7	1.9	17.4	2.3	0.8	
Gabon	Billion CFA francs	2.8	323.8	142.7	0.9	2.0	1.5	...	
Ghana	Million new cedis	61.6	4 482.3	390.9	1.4	15.8	3.7	1.5	
Ivory Coast ^f	Billion CFA francs	5.6	492.6	102.9	1.1	5.4	...	...
Kenya	Million pounds	15.1	1 006.6	206.9	1.5	7.3	4.9	1.6	
Lesotho	Million rand	...	75.1	10.6	...	...	4.4	1.7
Liberia	Million dollars	4.0	702.7	134.7	0.6	3.0	2.3	1.2	
Libyan Arab									
Jamahiriya ^f	Million dinars	223.4 ^g	1 872.7	453.7	11.9	49.2	3.5	2.3 ^h	
Malawi	Million kwachas	2.7	549.9	123.8	0.5	2.2	2.1	1.0	

MILITARY BUDGET EXPENDITURE COMPARED WITH OTHER STATISTICS (ANNUAL AVERAGES, 1973-1975) (continued)
 B. Developing market economies (continued)

Country	Currency unit	3	4	5		6		7		8		9
				Gross domestic product at current prices	Gross fixed capital formation	Gross domestic product	Gross fixed capital formation	Military budget expenditure as a percentage of	Gross domestic product	Gross fixed capital formation	Central government expenditure as a percentage of GDP for		Education	Health
AFRICA (continued)												
Mauritius	Million rupees	34.5	2 828.0	789.3	1.2	4.4	2.3	...	...	...	...	...
Nigeria ^b	Million nairas	454.4	10 523.9	1 942.0	4.3	23.4	...	...	...	...	...	...
Rwanda	Million R. francs	782.4	25 542.3	2 618.3	3.1	29.9	3.9	...	...	...	...	...
Senegal	Billion CFA francs	5.5	293.0	48.0	1.9	11.5	3.4	1.3	...	...	...	...
Southern Rhodesia	Million R. dollars	37.5	1 766.0	361.9	2.1	10.4	3.4	1.5	...	...	...	...
Sudan ^b	Million S. pounds	38.5	1 217.9	149.9	3.2	25.7	0.9	0.6	...	...	...	...
Togo	Million CFA francs	1 608.6	114 500.0	24 600.0	1.4	6.5	2.5	0.9	...	...	...	...
United Republic of Tanzania	Million T. shillings	434.1	15 854.0	3 121.7	2.7	13.9	3.5	1.9	...	...	...	...
Zambia	Million kwachas	54.8	1 372.7	406.8	4.0	13.5	...	...	...	...	...	...
CARIBBEAN AND LATIN AMERICA												
Argentina ^b	Billion pesos	5.3	360.5	71.5	1.5	7.4	...	...	...	...	...	...
Bolivia	Million pesos	748.6	33 951.7	4 519.3	2.2	16.6	3.7	1.2 ^b	...	...	...	...
Brazil ^f	Million cruzeiros	8 433.6	370 188.0	82 241.7	2.3	10.3	0.6	0.1	...	...	...	...
Chile ^f	Million pesos	18.2	569.2	69.2	3.2	26.3	3.9	...	...	...	...	...
Colombia	Million pesos	3 150.8	330 467.7	60 787.7	1.0	5.2	2.1	0.9	...	...	...	...
Costa Rica	Million colones	75.5	13 282.3	3 026.0	0.6	2.5	5.3	0.9	...	...	...	...
Dominican Republic ^b	Million pesos	39.5	2 410.5	522.7	1.6	7.6	1.8	0.9	...	...	...	...

CARIBBEAN AND LATIN
AMERICA (continued)

Ecuador	933.0	46 405.0	9 595.0	2.0	9.7	3.3	0.3
El Salvador ^b	44.5	3 381.7	561.1	1.3	7.9	3.2	1.3
Guatemala	28.8	3 105.7	467.7	0.9	6.2	...	...
Guyana ^c	19.9 ⁱ	602.3	122.0	3.3	16.3	4.7	2.2
Haiti ^b	39.5	3 034.7	276.0	1.3	14.3	0.6	0.7
Honduras ^b	32.0	1 814.0	324.0	1.8	9.9	3.1	1.1
Jamaica ¹	12.0	1 709.1	471.8	0.7	2.5	4.8 ^h	2.0
Mexico ^f	3.7	528.1	104.8	0.7	3.5	...	...
Nicaragua	150.9	9 659.0	2 145.7	1.6	7.0	2.4	...
Panama ^b	2.2	1 535.0	405.1	0.1	0.5	5.1	...
Paraguay	2 616.9	161 298.0	30 283.7	1.6	8.6	1.3	0.3
Peru ^f	9.9	305.0	39.7	3.3	24.9	4.1	1.1
Trinidad and Tobago ^b	8.3	3 012.3	640.0	0.3	1.3	3.0	1.8
Venezuela	1 906.0	109 303.3	23 717.0	1.7	8.0	3.7	2.3
ASIA							
Bangladesh	446.4	97 143.7	10 232.7	0.5	4.4	0.7	0.2
Burma ^c	593.2	10 772.0	1 184.0	5.5	50.1	2.6	1.0
Cyprus	6.0	296.3	63.8	2.0	9.4	...	...
India ^b	16.2	577.3	90.2	2.8	18.0	1.8	0.7
Indonesia	12.0	9 907.7	1 825.7	0.1	0.7	0.3	...
Iran ^b	93.6	2 093.0	404.6	4.5	23.1	...	...
Iraq ^b	173.8	2 172.4	345.9	8.0	50.2	3.4	0.8
Jordan	49.3 ⁱ	322.5	72.5	15.3	68.0	3.2	1.3 ^h
Republic of Korea ¹	181.4	4 939.0	1 169.0	3.7	15.5	2.4	0.1
Kuwait ^b	63.9	2 301.0	154.3	2.8	41.4	3.0	...
Lebanon ^k	145.3	5 543.3	1 075.7	2.6	13.5	2.8	0.5

MILITARY BUDGET EXPENDITURE COMPARED WITH OTHER STATISTICS (ANNUAL AVERAGES, 1973-1975) (continued)
 B. Developing market economies (continued)

Country	Currency unit	3	4	5	Military budget expenditure as a percentage of		Central government expenditure as a percentage of GDP for		
					Gross domestic product at current prices	Gross fixed capital formation	Gross domestic product	Gross fixed capital formation	Education	Health
1	2	3	4	5	6	7	8	9	9
ASIA (continued)									
Malaysia	Million M. dollars	815.7	20 744.3	5 085.7	3.9	16.0	5.3	1.7	
Nepal	Million rupees	91.3	13 154.0	...	0.7	...	...	...
Oman ^b	Million O. rials	61.7	292.9	...	21.1	...	...	...
Pakistan ^b	Million rupees	4 372.0	87 235.0	11 072.3	5.0	39.5	—	0.1	
Philippines	Million pesos	1 908.4	94 869.3	21 705.7	2.0	8.8	1.9	...	
Saudi Arabia ^b	Million riyals	3 363.0	91 705.3	9 703.7	3.7	34.7	1.8	...	
Singapore	Million S. dollars	616.3	12 069.6	4 418.1	5.1	13.9	2.5	...	
Sri Lanka	Million rupees	169.0	20 930.0	3 075.0	0.8	5.5	3.1	1.7	
Syrian Arab Republic ^b	Million S. pounds	1 289.7 ^d	10 927.3	2 217.3	11.8	58.2	3.2	0.3 ^b	
Thailand	Million baht	7 114.3	259 101.0	57 165.0	2.7	12.4	3.1	0.5	
Turkey ^e	Billion T. liras	8.7	232.1	40.4	3.7	21.5	2.9	0.8 ^a	
Yemen ^f	Million Y. rials	136.4 ^g	3 709.7	384.3	3.7	35.5	—	0.7	
OCEANIA									
Fiji ^b	Million F. dollars	0.7	349.9	64.3	0.2	1.1	2.9	1.6	

C. Centrally planned economies

Country	Currency unit	Military budget expenditure	Net material product	Net fixed capital formation	Military budget expenditure as a percentage of		Central government expenditure as a percentage of net material product for	
					Net material product	Net fixed capital formation	Education	Health
Bulgaria ^k	Million leva	968.3	10 726.7	1 700.3	9.0	57.0	—	17.8 ^h
Czechoslovakia	Billion korunas	18.3	382.2	73.3	4.8	25.0	...	...
Hungary ^b	Billion forints	9.8	347.8	70.1	2.8	14.0	3.9	3.3 ^h
Poland	Billion zlotys	43.9	1 210.4	354.9	3.6	12.4	5.3	3.9
Romania	Million lei	8 764.0	...	...	...	...	...	...
Union of Soviet Socialist Republics	Billion roubles	17.7	351.5	61.1	5.0	29.0	8.9	3.1
Yugoslavia ^b	Billion dinars	15.6	319.7 ⁱ	92.3 ^m	4.9	16.9	0.8	0.9 ^h

... Not available.

^a Including Namibia.

^b Data relate to 1972-1974 average.

^c Data relate to 1972 only.

^d Including labour and welfare.

^e Data relate to 1970-1971 average.

^f Data relate to 1971-1973 average.

^g Including expenditure on general public services.

^h Including social welfare.

ⁱ Data relate to 1973 only.

^j Including law and order.

^k Data relate to 1970-1972 average.

^l Gross material product.

^m Gross fixed capital formation.

ⁿ Including expenditures by all levels of Government and by private institutions.

Annex III

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